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ARTICLE XIX.—FURTHER REMARKS ON THE AMMONIO-IODIDES OF MERCURY. By Ambrose Smith.

In a paper on the hydrargyro-biniodides of potassium, &c., published in No. 4, vol. vi, of this Journal, I included a notice of a compound of ammonia and biniodide of mercury. A number of the Ann. des Mines, received since that paper was printed, contains an article by M. O. Rammelsberg, extracted from Poggendorf's Annalen, in which he gives the result of his observations on this subject.

The white compound, formed by adding aqua ammoniæ to biniodide of mercury in solution, or by exposing the biniodide to the action of gaseous ammonia, he finds to consist, as stated in my former paper, of ammonia and biniodide of mercury; and its constitution he gives as $2HgI^2+N^2H^6$, (or HgI^2+NH^3.) The formula which my experiments indicated is, HgI^2+2HN^3, and this agrees with Rose's analysis of the same compound. Adopting Kane's views of the proximate composition of ammonia, the formula would be $HgI^2+2(H.HN^2$.)

The yellow salt into which it is converted by the limited action of water, does not appear to have been noticed by him.

On forming the white compound, by treating biniodide of

mercury with aqua ammoniæ with the aid of heat, a small proportion of residue is left undissolved. This I did not examine particularly, supposing it to be HgI, deposited because the biniodide did not contain the full proportion of iodine, (which is usually the case,) together with a little adherent HgI^2. According to M. Rammelsberg's observations, it is a compound analogous in its composition to that which is produced when white precipitate is decomposed by washing with water or an alkaline solution; that is, it consists of biniodide of mercury, oxide of mercury, and amidet of mercury. As the subject is interesting from its connection with the theory of amidogen and the amidets, and, by analogy, with the composition of white precipitate, I present an abstract of M. Rammelsberg's observations upon it from the Ann. des Mines, not having access to the original paper.

When biniodide of mercury was warmed with aqua ammoniæ, he found a complex action to occur. Besides the combination of biniodide of mercury and ammonia, which dissolves, a white substance is formed which soon becomes brownish, and finally takes the color of kermes, without undergoing further alteration by prolonged boiling. This brown compound does not correspond with white precipitate, but with the product which results when the latter is decomposed by water or the alkalies, that is to say, it is formed of HgI^2, HgO, and $HgHN^2$.

In order that a product of this kind should be formed by this reaction, hydriodic acid must be produced; and this M. R. has found to be the case.

To obtain this brown compound in a state of purity, the supernatent liquid must be rapidly poured off while it is yet warm, and the residue boiled again with aqua ammoniæ, and thus repeatedly until no more is dissolved.

This compound has a brown, sometimes a purple color. It is inalterable in the air, and may even be heated to 180° without decomposition. It does not disengage the least trace of ammonia when boiled with a solution of potassa. Judging from the results of its analysis, and the nature of the reaction which

produces it, its formula appears to be $HgI^2+2\dot{H}g+HgN^2H^4$, (or $HgI^2+2\dot{H}g+Hg2NH^2$.)

The formula of the iodine compound, corresponding to white precipitate, should be $HgI^2+Hg2NH^2$, but it does not appear that this product can be obtained.

M. Rammelsberg has also made some researches on the action of ammonia on the protiodide of mercury. He found that when this substance was digested in aqua ammoniæ, at the ordinary temperature, a black powder was formed, which was the ammoniacal protiodide. The evanescent nature of this compound, together with the facility with which the protiodide itself is decomposed, renders it very difficult to analyse; by drying alone it loses all its ammonia. If the protiodide is boiled with solution of ammonia, a black precipitate is produced which contains much metallic mercury, and the liquor, on cooling, deposites white crystals of the ammoniobiniodide.

ART. XX.—REAGENTS AND THEIR USES.

By Augustine Duhamel.

REAGENT.

Under this title is included all those nice chemical preparations indispensably necessary for the use of the analytic chemist as tests. These, from the degree of purity demanded, have heretofore been required to be imported from distinguished French houses, such as Robiquet, Pelletier and others, but of late this necessity has been saved us by the advanced state of chemistry in this country, and the existence here of laboratories that have acquired general confidence wherever known by the excellence of their products. Their preparation, however, is not confined to manufacturing chemists, as some of the Cabinets of Reactives, belonging to our Professors, have been supplied by the skill of a number of our apothecaries. These latter, who give any attention to this important branch, are so few in number that an experimental chemist is often at a loss to procure such of them as he may wish, out of two or three principal cities.

Many, styling themselves "Apothecary and Chemist," limit their stock of chemicals to such substances as belong exclusively to the Materia Medica, and thereby neglect the advantage that would accrue to them did they devote but a little attention to keeping on hand supplies of such pure chemical tests as are most needful in a chemical laboratory.

The following substances, which should be pure, comprise those most commonly used for analyses of minerals, mineral waters, &c. The use to which these substances are applied is likewise indicated, which may not be without interest to many.

Boracic Acid, used to discover small quantities of phosphoric acid in minerals.

Hydrochloric Acid, for dissolving oxides, separating them from their compounds,—and precipitating silver.

Sulphuret of Antimony, or *Protosulphuret of Iron*, for making *Hydrosulphuric Acid*, used in organic analyses to obtain and separate the organic acids from the insoluble compounds formed with protoxide of lead.

Nitric Acid.—As a solvent of metals, separating their alloys, decomposing the phosphates and tartrates, and detecting the presence of ammonia, &c.

Oxalic Acid, for precipitating lime, &c.

Distilled Sulphuric Acid, for decomposing neutral salts, detecting lead in vinegars, and discovering baryta in mineral waters.

Sulphurous Acid, for precipitating sulphur from sulphuretted hydrogen, &c.

Lime Water, for detecting carbonic acid, &c.

Aqua Ammonia, to precipitate metallic oxides from their solutions, or to redissolve the soluble, and separate from the insoluble oxides—also to precipitate vegetable alkaloids.

Watery Solution of Baryta, for detecting sulphuric acid, and ascertaining its proportion, &c.

Carb. Potassa, to test lime water, and precipitate metallic oxides from the sulphates, and earths from the muriates.

Chloride of Barium, for detecting the presence of sulphates in mineral waters.

Pure Potassa and Strontia, in the dry state for decomposing salts of earthy or metallic bases by calcination.

Solution of Pure Potassa, for a multitude of operations.

Prussiate of Potash, for detecting iron in solutions, and the presence of copper in mineral waters.

Nitrate of Silver, for detecting hydrochloric acid, and to show the presence of muriates and sulphates in solutions.

Hydrosulphate of Ammonia detects many of the metals, and separates them from alkaline and earthy salts.

Nitrate of Mercury discovers the carbonates of lime, soda,

and magnesia, as well as sulphuric and hydrochloric acids. Used to precipitate chromic acid.

Deutoxide of Copper, for decomposing vegetable and animal matters, and determining the elementary composition of immediate principles: their proportion of hydrogen and carbon.

Acetate and Sub-Acetate of Lead, to detect hydrosulphuric acid in gases or mineral waters, and to precipitate acids and coloring matter from organic substances.

Oxalate of Ammonia, used in mineral analyses to separate the lime and estimate its weight, by the quantity of oxalate of lime formed after the ammonia is driven off by heat.

Deuto-chloride of Platina, to discover potash, ammonia and their salts, in concentrated solutions.

Deuto-chloride of Gold, to discover tin in solution.

Iodide of Potassium, to distinguish metallic solutions from one another, such as lead, mercury, silver, bismuth, platina, &c.

Bi-carb. Potassa, to separate magnesia from its solutions, &c.

Sulphate of Soda, to precipitate from their acid solutions, the oxides of barium, strontium, and lead.

Succinate of Ammonia, to separate peroxide of iron from other metallic oxides which form with succinic acid salts, soluble, or partially so, in water.

Gelatine, for precipitating tannin.

Tincture of Galls, for detecting iron.

Tincture of Iodine, to detect starch.

Tincture of Litmus, for detecting the presence of acids.

Chloride of Calcium, for drying gases.

Nitrate of Potash, *Bi-borate of Soda*, *Phosphate of Soda and Ammonia*, and *Carbonate of Soda*, as fluxes.

Turmeric and *Litmus* papers, *Starch*, *&c.*

The saturated solutions of the above mentioned substances, when kept, should be always preserved in glass stop vials.

With these articles might also be included, a small stock of

white glass tubes, rods, retorts, matrasses, test glasses, adapters, gas receivers, florence flasks, porcelain, capsules and funnels, together with a blowpipe and platina crucible, without which a laboratory would be incomplete.

ART. XXI.—NOTE UPON THE ETHERIAL OIL OF ERGOT.

By Augustine Duhamel.

The January number of the Journal of Pharmacy contains an article upon the oil of ergot, taken from the Edinburgh Med. and Surg. Jour., in which two methods are referred to for obtaining it. Having, at the time of perusing this publication, an order to procure the oil for the use of some Practitioners of Homœpathy, and desirous of testing the nature of the product afforded by the ethereal process, an experiment was made with the following result.

One pound of ergot in fine powder was put into a displacement filter, and treated with successive portions of sulphuric ether, amounting in all to half a gallon. To prevent the evaporation of the ether, the filter was covered over with a wetted bladder. When the whole of the tincture had passed, which was of a reddish yellow color, it was placed over a water bath, and heat applied until no more ether remained. The product measured six ounces, and consisted of a fixed, viscous, reddish brown, transparent oil. Previous to the ether being wholly evaporated, there appeared to be two oils, the supernatent one being a thick, blackish oil, the other a much less colored, but heavier oil. The temperature of the bath, however, caused them to blend together as the ether parted from them.

Upon testing some of its properties the following facts were elicited. Its taste was precisely similar to castor oil, leaving a slight acridity: odor faint, resembling ergot; spec. grav. .869.

It had no action upon litmus. Subjected to heat, it gave off, while boiling, a thick white smoke and a fatty odor, and was gradually dissipated, leaving behind a slight carbonaceous residue. Allowed to repose for twenty-four hours, at a common temperature, a notable proportion of stearine (or rather *margarine*, a name assigned by Lecanu to the solid principle analogous to stearine, derived from vegetable substances,) was deposited ,and the oil assumed a darker hue.

Its color was mainly owing to the resin, and some of the coloring matter dissolved by the ether; for upon washing it with alcohol, it was in a great measure deprived of color and spissitude.

It is very soluble in ether, sparingly soluble in alcohol of 35°, completely dissolves in a large proportion of boiling alcohol, but, upon cooling, some of the oil separates and subsides. Water added to the solution of the oil in alcohol, renders it very milky, and separates some white fatty matter which floats upon the surface.

With concentrated solutions of potash, soda, and ammonia it saponifies readily. In addition to the medicinal qualities assigned to ergot in substance, this oil possesses the property of a styptic, having, as it is said, the quality of arresting hæmorrhage in an eminent degree.

After exhausting the ergot of its ethereal tincture, by means of water thrown upon the filter, there passed a transparent liquid of an intensely dark red color, without smell or taste, beyond that of the ether with which it had been contaminated. It possessed the following characters: It combined with water in every proportion, was not miscible with ether, and alcohol threw down a precipitate. It was discolored by chlorine, and likewise by dilute sulphuric acid; while caustic potash had the effect of deepening its color. Sub. acet. plumbi threw down a copious precipitate. Sulph. Ferri changed it to a turbid purple.

From these experiments, we may judge this latter substance to have been simply red coloring matter combined with gum.

ART. XXII.—ON THE IODIDES OF ARSENIC.

By Henry F. Fish.

In the Journal of Pharmacy for October, 1840, (which, owing to an accident, did not reach me in the country until the last day of March, 1841,) I notice a few remarks upon *Iodide of Arsenic*, in a series of notices communicated by Mr. Augustine Duhamel.

As Mr. Duhamel's notice of this salt, and its mode of preparation, is not sufficiently minute *in detail*, and as the tyro in chemical manipulation may be gratified by a few practical details, I have concluded to submit the following paper.

There are *two* iodides of arsenic. The first is a *sesqui-iodide*, consisting of

Arsenic,	2 equivalents.
Iodine,	3 "

The second is a *Duo-semi quiodide*, (or per-iodide, as it is common to say,) consisting of

Arsenic,	2 equiv.
Iodine,	5 "

My first essay in the preparation of these iodides was made in December, 1838. I had not, at that time, seen M. Plisson's paper upon the discovery and manufacture of the sesqu-iodide; and my only information was gained from Thomson's Chemistry.

I proceeded, however, using the *moist way*, with

Pure arsenic,	ʒvj.
Iodine,	ʒxx.
Distilled water,	℥xxv.

From my notes made at the time I copy as follows:—"Reduce the arsenic to a fine powder, put it into a suitable glass flask, and moisten it with a small portion of water, agitating it until it is completely wet; then add the residue of the water and the iodine. Digest, by slow heat, until ebullition ensues. Immediately after boiling, the solution changes from a dull grayish-black color, to a very light reddish hue, and the smell of iodine becomes extinct. Combination being thus insured, filter the solution while hot, and evaporate slowly in a porcelain dish. At a certain degree of concentration, a metallic pellicle forms upon the surface, covering it entirely, which, when agitated with a glass rod, is precipitated, forming a semi-crystalline mass. This is the sesqu'iodide of arsenic, but not in a state of absolute purity. Continue the evaporation, and dry the mass, constantly agitating it with a glass rod, to prevent its splashing out of the dish, and its consequent loss. *When dry*, the crystals are to be put into a well adapted capsule, of platina, or Berlin porcelain, and fused."

The fusion should be conducted with skill and rapidity. It is decidedly preferable to raise the heat at once, than to prolong the process by gradual degrees of augmentation, as the salt is not only readily vaporised, but decomposed, during fusion. When fusion is complete, the liquid salt should be instantly poured upon a marble slab and allowed to cool.

During fusion, copious orange-colored vapors are generated, which are abundantly irritating to the eyes and fauces; and I would suggest the greatest caution against their inhalation.

If the process has been skilfully conducted, the fractured mass will present, at its edges, a crystalline appearance, the structure of which is lamellated. Externally, it has a dull metallic lustre, of a brick red color, not unlike some specimens of deut-oxide of mercury of inferior quality.

It should be preserved in glass-stopt vials. The same process, with the addition of another equivalent of iodine, insures the production of the *duo-semi, (alias per,) iodide of arsenic.* The fusion of this latter iodide requires nicer management of heat, and, on account of its greater capacity for vaporisation, this should be still more rapidly conducted. The same phenomena attend its progress, and it differs in its physical aspect from the sesqu'iodide only in color, which is two or three shades darker. Perhaps a *slight* excess of iodine is preferable during combination, to avoid any risk of free arsenic being retained in the solution.

Although M. Plisson has, (as far as my knowledge extends,) announced but one iodide of arsenic, there can be no doubt of the existence of another, as I have proved by both synthesis and analysis.

These iodides are positive elementary compounds, containing no equivalent of water. When exposed to the action of light and air, they gradually attract moisture, but I have not noticed any sensible change of color. They are vaporisable at the ordinary temperature to some extent; and if the exposure is sufficiently prolonged, they entirely disappear.

When treated with water in quantities too small to effect solution, they are decomposed:—Iodo-hydric, and arsenious acids are formed, mingled with undecomposed portions of the salt.

In water sufficient to effect the solution, the sesqu'iodide is, according to M. Plisson, converted into a *neutral hydriodate;* "although," says he, "the liquor reddens violently the color of tournesol;"—an action which he attributes to the *weak saturating properties* of the arsenious acid.

These iodides may be prepared by bringing the dry elements into contact, in a suitable flask, or tube, and applying heat. They are easily sublimed during the process, but there is invariably a greater or less degree of decomposition attending this mode. The *moist way* is not only the safest, but decidedly the best mode; and its use is preferred by M. Plis-

son himself. It certainly insures a more perfect product, at a slight addition of labor.

The formula for the sesquiodide is

$\underline{\underline{AsI^3}}$, and its atomic weight 454

For the duo-semi qu'iodide,

$\underline{\underline{AsI^5}}$, atomic weight 706

With the powers of these iodides, as remedial agents, I am unacquainted.

In the *Annales de Chimie et de Physique*, No. 39. pp 265, 274, may be found an elaborate paper upon the composition and analysis of the sesqu'iodide of arsenic, by M. Plisson; to which, I would refer all those who may require more minute details upon these topics.

New York, 22d May, 1841.

ART. XXIII.—PHARMACEUTICAL NOTICES. No. XIX.

By Augustine Duhamel.

Remarks upon Citrine Ointment.

The difficulty of preserving, when made, the proper consistence and fine yellow color of this ointment, led Mr. Wm. R. Fisher, some ten years ago, to abandon the formula recommended by the U. S., Lond., Dub., and Ed. Colleges, and substitute another; the successful result of some experiments made by himself upon various fatty matters, united with nitrate of mercury in solution. This formula, to which he gave a preference, consisted in employing neatsfoot oil mixed with a small quantity of lard, in lieu of variable proportions of lard and olive oil, prescribed by the different Colleges, and still retained by the three last mentioned. The neatsfoot oil Mr. F. found to realize his wishes, in regard to durability of color, consistence, &c.

At that period, the hardness of the citrine ointment, as made in the common way, was attributed to the action of the nitrate upon the lard, but this has since proved erroneous, by the more extended experiments of chemists upon the composition of fatty matters generally, from which we learn that this solidity is due to the reaction of the nitrate of mercury upon the peculiar *oleine* of the olive oil. In fact, this solidification is so characteristic, as to establish the nitrate of mercury as a test for recognizing the degree of purity of olive oil.

While this solidification takes place with olive and some other vegetable fixed oils, it does not occur with the greater part of the animal oils. The object of this notice is to sustain an already expressed opinion, that other animal oils may supply the place of neatsfoot oil without any disadvantage, especially as the last is not so readily obtained as hog's lard. Inasmuch as a portion of lard is directed to be mixed with the

neatsfoot oil, why would it not be as easy, or preferable to use all lard, if, by so doing, the same intention is fulfilled? That it is so, I would wish the pharmaceutic public to judge from the following:

Dr. Duncan, of Edinburg, states in his Dispensatory, that with lard alone he prepared an ointment which retained the required color and consistence. To this fact I would give additional strength, by stating that for four or five years past I have sought no other vehicle for making the ointment of nitrate of mercury than butcher's lard. My method of proceeding is first to prepare my solution of proto-nitrate, without heat; then melt the lard over a common fire in a metallic vessel, and transfer it to one of porcelain, (ointment jar.) This being done, I pour gradually the solution into the heated grease, (140° F.,) and commence stirring the mixture, while hot, with a wooden spatula for about ten minutes, which has the effect of increasing the temperature of the mixture some 20° or 30°, and causing the escape of hyponitric acid vapors. I then set it aside to cool. If the stirring be prolonged, a violent effervescence takes place, which may cause the mixture to overflow—and likewise renders it darker in color.

Citrine ointment prepared in the manner here mentioned, differs from the one made with olive oil and lard, in being of an orange, instead of a lemon yellow color. It is of good consistence, perfectly homogenous, and retains these characters through summer and winter, without acquiring the mottled appearance of the other.

Hypo-Sulphite of Soda.

This is a chemical agent of some importance to those practising the Daguerreotype art, being used in the form of a weak solution to wash off the superfluous iodine from the plate, after the object is depicted upon it. It is made by dissolving two pounds of subcarb. sodæ in three and a half pounds of water, into which is thrown four ounces of flowers of sulphur, stirred in six ounces of water. A current of sulphurous acid gas, obtained from the decomposition of ten pounds of

sulphuric acid, by four pounds of mercury, is made to pass through this solution. When the reaction is complete, filter the liquid and evaporate slowly, so as to crystallize. Decant the mother waters, dry the crystals between folds of bibulous paper, and preserve in glass stop vials. The apparatus in which it is most conveniently made, consists of a matrass in which the acid is formed, to the neck of which is adapted two tubes, (an S and a connecting tube,) and a couple of Wolf bottles; one containing the water to wash the gas, and the other the saline liquor. The last should be provided with a tube, terminating in a solution of lime, to carry off the excess of acid.

Another and more simple method, according to Berzelius, consists in exposing to the air a concentrated solution of sulphuret of sodium, which gradually becomes oxidized.

Hyposulphite of soda crystallizes in tetrahedral prisms, which are colorless, transparent, and at times of large size. Some lately exhibited at the laboratory of Messrs. Rosengarten and Denis were remarkable for their transparency and volume.

Chloride of Gold.

This is another preparation used in the Daguerreotype, and is employed in very minute portions to give color as well as fixedness to the image represented upon the plate, which otherwise would be effaced by the slightest touch. To give the proper color and effect, it is absolutely necessary that the gold should be free from the contamination of other metals. For this purpose no better means offer than the following:

Dissolve gold coin in nitromuriatic acid, then evaporate to dryness and subject it to a red heat; afterwards pour upon it sufficient nitric acid to dissolve out all the alloy contained in the gold coin: filter, and again dissolve in aqua regia, in the proportion of one part pure gold to three parts of acid, (formed of pure acids.)

Effect the solution in a porcelain capsule upon a sand bath,

then evaporate to dryness, at a gentle heat, to drive off the excess of acid. Dissolve the mass in water, filter, and again evaporate till a pellicle is formed. By cooling, the salt crystallizes. Being very deliquescent, it should be preserved in glass stop vials; or, what is better, dissolved in a certain quantity of distilled water, (say ʒi to ℥i,) in order that you may conveniently dose your gold in further diluting it for use.

Formulæ.

For the gratification of some of our distant friends, who have not the same advantages that the apothecaries of large cities possess, of being able to refer to foreign works or formularies, we commence the publication of a series of formulæ, embracing such as are generally employed and called for by English, German, or French physicians practising medicine in this country.

Catechu Lozenges—(Paris Codex.)

Powd. Ext. Catechu,	1 part.
Powd. White Sugar,	4 parts.
Mucilage of Gum Tragacanth,	q. s.

For lozenges weighing 12 grs.
Dose from 3 to 10 a-day. For sore throat, &c.

Van Swieten's Liquor—(Codex.)

Corrosive sublimate,	gr. viij.
Distilled water,	℥xivss.
Alcohol,	℥iss.

Dose from 2 to 8 drachms progressively, in 4 ounces of mucilaginous vehicle. Each drachm contains $\frac{1}{16}$th of a grain of corros. sub.

Oil of Phosphorus—(Magendie.)

Phosphorus,	ʒj.
Oil of Sweet Almonds,	℥ij.

Dissolve, and add a few drops of oil of bergamot.
Dose from 20 to 30 drops in an emulsion.

Protiodide of Mercury Pills—(Biett.)

Protiodide of Mercury,	℈ij.
Powd. G. Guaiac,	ʒj.
Thridace,	ʒss.

Mix, and divide into 48 pills.

Dose 1 per day. For scrofula, syphilis, &c.

Lactate of Iron Lozenges.

Lactate of Iron,	2 or 4 oz.
Sugar,	1 lb.
Mucilage of Tragacanth,	q. s.

For lozenges weighing 10 grains.

These lozenges have proved to be the best form of administering this new chalybeate.

Sulphuric Lemonade—(Paris Hospitals.)

Sulphuric Acid,	ʒss.
Simple Syrup,	ʒiv.
Water,	℔ iv.

As a drink in fevers, colica pictonum, &c.

Dinner Pills,

Otherwise called Stomachic or Lady Webster Pills.

Aloes, in powder,	ʒvj.
Red Roses, "	ʒij.
Gum Mastic "	ʒij
Syrup of Wormwood,	q. s.

Make a mass, and divide into pills of 3 grains.

Sulphur Bath—(Paris Hospitals.)

Sulphuret of Potash,	4 oz.
Water,	200 ℔.

For a bath in cutaneous diseases. Sometimes this is rendered gelatinous, to imitate the *Barege Water*, by the addition of 2 pounds of glue dissolved in hot water.

Oil of Hyosciamus and Oil of St. John's Wort.

These are preparations frequently called for in this country, and are made by decoction. The first, by boiling one part of henbane leaves with four parts of olive oil, and allowing it to macerate several hours before straining. It is of a green color, and used for frictions to calm pain. The latter is made in the same way, with one part of the summits of hypericum, and two parts of olive oil. It is of a fine red color, and used for sprains and bruises.

ART. XXIV.—SELECTIONS FROM LASSAIGNE'S DICTIONNAIRE DES REACTIFS.—No. 2.

Translated by AUGUSTINE DUHAMEL.

Commercial Hydrochloric Acid.

THIS acid, which is manufactured on a large scale, is commonly colored yellow, as met with in commerce. This is owing either to a small quantity of decomposed organic matter, or to a certain quantity of perchloride of iron, formed by the action of the hydrochloric acid upon the peroxide of iron existing in the vessels of stone in which it has been prepared. Independently of these two foreign substances, this acid is sometimes found to contain, in solution, chloride of lead and sulphurous acid: the presence of perchloride of iron may be shown in this acid by diluting it largely with water, and adding a few drops of a solution of ferrocyanate of potash: a deep blue color is immediately produced, and a precipitate shortly after.

The existence of protochloride of lead is indicated by an examination of the residue of the evaporation or distillation of a portion of this acid. This compound is exhibited in the form of small scales, white, and pearl-like, sparingly soluble in cold, but soluble in boiling water.

As to the sulphurous acid, which now and then exists in this acid, and arises from the circumstance, that towards the end of the operation a part of the sulphuric acid in excess contained in the residue has been decomposed by the elevation of temperature, it is easy to recognize its presence by saturating the acid diluted with water, by a solution of baryta, collecting the precipitate upon a filter and drying it at a moderate heat. This precipitate of *sulphite of baryta*, heated in a tube, is decomposed, and furnishes sulphur, which sublimes, and is converted into sulphate of baryta: treated with hydrated sulphuric acid, it immediately exhales a lively and penetrating odor of sulphurous acid.

M. Girardin, Professor of Chemistry at Rouen, proposes, in order to discover the existence of sulphurous acid in the commercial hydrochloric acid, a process founded upon the decomposition of sulphurous acid by protochloride of tin.

This is the method of operating—

Put into a test glass about sixteen grammes (half ounce) of the acid to be tested, add to it eight or ten *grammes* of crystallised protochloride of tin, which dissolve by stirring with a glass tube, and pour upon the whole two or three times its volume of distilled water.

When the acid is pure no change of color takes place, but however small a quantity of sulphurous acid it may contain, it will be seen, as soon as the protochloride of tin is added, that the acid loses its transparency, becomes yellow, and from the time the water is added, the odor of hydrosulphuric acid is perceived, and the liquid turns brown, depositing a powder of the same color: this precipitate is a mixture of the *protosulphuret of tin* and bioxide of the same metal.

In this reaction the tin of a part of the protochloride becomes free, and decomposes the sulphurous acid, so as to produce all at once the two compounds above indicated; as to the disengagement of the hydrosulphuric acid, it is owing to the solution of a little protosulphuret of tin formed by the hydrochloric acid which is present.

This simple and ready process offers the means of testing,

in less than a minute, the purity of the hydrochloric acid of commerce. According to Girardin, $\frac{1}{100}$th part of sulphurous acid cannot escape detection when these means are employed.

Means of ascertaining, in a direct manner, the proportion of hydrochloric acid in an acid liquid, the specific gravity of which is unknown.

This is made known by discovering what quantity of marble this acid will saturate. For this purpose, take a certain quantity, by weight, of acid, which you dilute with two or three times its weight of distilled water; then drop into it a piece of marble, the weight of which you have previously ascertained. The saturation being effected, take away the piece of marble, wash it, and, when dried, weigh it; the difference between the weights gives you the quantity of marble dissolved. To find the corresponding proportion of hydrochloric acid which has been saturated, you must bear in mind that two atoms of hydrochloric acid, weighing 455.13, are exactly saturated by one atom of carbonate of lime, weighing 632.46.

Or in establishing a rule of three direct, you easily attain the fourth term of the proportion, which is the quantity of acid that has been saturated by the weight of marble dissolved.

Suppose that in a preliminary trial, twenty grammes of hydrochloric acid had dissolved 8.45 of marble, you would have the following proportion:

$$632.46 : 455.13 :: 8.45 : x$$

$$x = \frac{8.45 + 455.13}{632.46.} = 6.08$$

The quantities of real acid contained in solutions varying in specific gravity, may be estimated by reference to a table of Edmund Davy, to be found in Turner's Chemistry.

ART. XXV.—ON NARCISSUS PSEUDO-NARCISSUS, AND ITS ACTIVE AND EMETIC PRINCIPLE, NARCITINE.

By Dr. Jourdain.

It is known that the *Narcissus pseudo-narcissus* has been the subject of many experiments; 1. M. Loiseleur Deslonchamps has attempted to discover the emetic principle of the bulbs and flowers, with the view of employing these indigenous products as a substitute for ipecacuanha; but the therapeutic experiments did not allow him to prove the presence of an emetic principle in this plant.

2. MM. Avuret et Waltecamp, physicians at Valenciennes, affirm that they have employed, with success, the flowers of the narcissus, in the dose of five to fifteen decigrammes, to produce vomiting.

3. M. Dufresnoy, physician at Valenciennes, has established that the extract obtained from the flowers has an emetic action in the dose of five to fifteen centigrammes.

4. M. Caventou, who analysed this plant, did not detect its emetic property; he perceived, from the analysis, that it was composed of a fatty odorous matter, of a yellow coloring principle, of gum and of vegetable fibre. M. Charpentier established the presence of resin, gallic acid, mucilage, extractive, lignin, and finally, chloride of calcium.

M. Jourdain attributes the properties of narcissus pseudo-narcissus, to a peculiar principle, narcitine, of which he states the properties. This substance is white, sweet, and transparent, with but little taste or smell; it is deliquescent and soluble in water, alcohol, and in vinegar. The dried scales of narcissus contain nearly one-half their weight of narcitine. This principle is less abundant in the flowers; when they begin to fade, they only contain gum; and the same of the leaves. On the contrary, the bulb is less rich in extractive during vegetation; it is in this principle that the emetic virtue of narcissus resides.

M. Jourdain has ascertained that the peculiar principle resides in nearly the same proportions, in the *narcissus poeticus*, lazetta, as in the pseudo-narcissus. The N. Jonquilla contains a more viscid matter than the preceding species.

According to M. Jourdain, the bulb of the N. pseudo-narcissus contains, in 100 parts,

Narcitine,	57
Gum,	6
Tannin,	24
Lignin,	28
Saline matter and vol. o l.	

The flowers of the narcissus contain scarcely 25 per cent. of narcitine.

The opinion of M. Jourdain, which agrees with that of MM. Avuret, Waltecamp, Dufresnoy, in establishing the emetic properties of narcissus, is contrary to the facts observed by MM. Loiseleur Deslongchamps and Caventou; it would therefore be useful to repeat these experiments, and to ascertain whether the narcissus collected in the department of Seine possesses the same properties as that which was examined by M. Jourdain.

Journ. de Chim. Med.

ART. XXVI.—ON THE ADULTERATION OF CREOSOTE BY ALCOHOL.

THE "Revue Scientifique et Industrielle," published by M. Quenesville, contains the following article, which we think should be brought to the notice of our readers.

The solubility of Creosote in alcohol, affords the fraudulent dealer a good mean of adulterating this article. The strong odor of creosote does not, in fact, allow that of the spirits to be recognised. There is only one point by which the eye may distinguish its falsification, and that is the greater or less viscidity of the liquid. We are, therefore, obliged to examine the liquid, if we wish to arrive at certainty with respect to its purity.

Nothing is more easy for the chemist than the separation of alcohol from creosote; for creosote being more dense, distillation in a retort will suffice to isolate the alcohol as the first step; then the flame of this latter being high and clear, and not low, white and smoky, like that of creosote; the ease with which the liquid may be tried by the hydrometer; the odor of alcohol, although marked by a little creosote, is easy to recognise; besides, the fluidity of the products are sufficient characters. But we now write for the benefit of the purchaser, who has neither the time nor facility for these manipulations; he requires a prompt mean by which he may be able to indicate its presence in every case, and besides, have the advantage of not wasting the article.

Creosote, when pure, should mark on a hydrometer for acids 8° or 9°, at the ordinary temperature of 12° to 15°, C. Whatever it may want of this, is due to admixture. Creosote is sometimes found in commerce, so light that the alcohol hydrometer only will mark its degrees. This article is readily purified; it is only necessary to distil and examine successive portions of the product which passes over, to have the resi-

due in the retort, which is the creosote, perfectly pure. If this latter is colored, it may be purified by continuing the process.

We have procured creosote directly from the laboratories of Germany, and have seen, with pain, that some manufacturers of that country, ordinarily honest and conscientious, follow the errors occurring in the markets of Paris. One specimen marked 6°; from this there was derived a light liquid, having all the characters of alcohol. The liquid in the retort, after having lost, by distillation, all its alcohol, marked, when cold, 9°; on mixing together these two products, viz., that which came over in the distillation, and that remaining in the retort, the mixture, as before, marked 6°.

As an approximation, it is found that creosote of 6° contains seven per cent. of alcohol of 33°; and that 34 per cent. causes the gravity to descend to zero.

When very strong alcohol is used to mix with the creosote, it requires but very little to cause the indications of the gravity to descend, while if very weak alcohol is used, the proportion may be great to produce the same effect, so that it is difficult to indicate the proportion of creosote in any mixture without distillation; but as alcohol of 33° is that usually found in commerce, it is this which fraudulent dealers would most commonly use.

X.

Journ. de Chim. Med.

ART. XXVII.—ON THE PROTO-IODIDE OF IRON AND ITS MODE OF PREPARATION; FOLLOWED BY FORMULA FOR ITS ADMINISTRATION, EMPLOYED FOR SOME TIME WITH REMARKABLE SUCCESS IN THE TREATMENT OF PHTHISIS PULMONALIS. By Alphonso Dupasquier.

Although this paper has for its essential object the bringing forward the pharmaceutical details of the preparation of proto-iodide of iron which I have introduced into medical practice, it appears to me to be indispensable, before entering upon this subject, to make known the circumstances which have led to its use; and to give, in a few words, an idea of the importance of the results which I have obtained.

This paper will therefore be divided into two parts; the first, historical and medical; the second, chemical and pharmaceutical.

FIRST PART.

* * * * * * *

SECOND PART.

Researches upon the Iodide of Iron of Pharmacy; the preparation of the Solution of Proto-iodide of Iron, and the formulæ for its employment.

The iodide of iron generally used, the preparation of which is pointed out in all the Pharmacopœias published for the last ten years, is a *totally different medicine*, both *in its chemical nature* and *in its therapeutic action*, from the *proto-iodide of iron* which I have used. *It is not a proto-iodide of iron*, as designated in all the formulæ, but a *mixture, of which the composition varies* according to the care used in its *preparation* and *preservation*.

This iodide, the only one which had been employed by physicians up to the moment when I commenced to report the

result of my observations* is, as is well known, a solid salt, prepared by evaporating to dryness the solution of the proto-iodide. During this evaporation, this salt is partly decomposed by the influence of atmospheric oxygen, and this alteration continues, even in the bottle in which it is preserved, for there is always present a certain quantity of air, which is renewed each time the bottle is opened. This alteration is the more easily produced, since the salt is deliquescent, and the moisture absorbed promotes the action of the oxygen.

* The most recent Pharmacopœias as the *Codex*, the *Elements of Materia Medica and Pharmacy*, by M. Bouchardet, and even the last edition of the excellent treatises of M. Soubeiran, published in 1840, only give the preparation of the solid iodide, and all the formulæ which they report from MM. Pierquin, Ricord, &c., indicate this same iodide. Ii is evident that in composing these formulæ, the authors are not concerned on account of the ready decomposition of the ferruginous salt in contact with air. It is this same iodide which is concerned in the formulæ recently published.

It is true, that in the latter numbers of the *Journal of Pharmacy*, there is given a formula for the syrup of proto-iodide of iron, prepared with a solution of this salt; but independently of this preparation being colored, which indicates that it is defective, the publication of this formula is long posterior to mine, made in 1838, in the *compte rendu de la Societé de Medecine de Lyon*, where, from page 176 to 181, an account is given of my solution of pure proto-iodide of iron, and of a syrup which I prepared by mixing it with syrup of gum. It is from this account, which was distributed in great number to learned societies and medical journals, both in France and elsewhere, that some collections of therapeutical observations have spoken of the solution and syrup of proto-iodide of iron. This syrup has been prepared for more than three years, according to my directions, in most of the shops of Lyons. One collection of formulæ, published during the current year, (that of M. Foy,) gives, even *under my name*, formulæ for the proto-iodide of iron, which are not exactly such as I have pointed out. Finally, the therapeutical application of the colorless solution of proto-iodide of iron, as well as the directions for its pharmaceutical preparation, in which the pure proto-salt is preserved without alteration, really belong to me. No one, before myself, had pointed out the necessity of using a proto-iodide not altered by the air; the whole therefore is not less new than the employment of the same preparation in the treatment of phthisis pulmonalis.

All the characters, whether physical or chemical, demonstrate that the iodide of Pharmacy is not a proto-iodide of iron;

1. This salt, instead of being *without color*, or *very slightly greenish*, as the proto-iodide should be, is always a brown of greater or less depth;

2. When dissolved in water, the liquid which should be *without color* is of a *reddish brown*, more or less deep, according as the iodide has been subjected for a greater or less time to the influence of atmospheric oxygen;

3. The *odor* and *taste* of this solution evidently indicate the presence of a notable quantity of free iodine; the solution of proto-iodide recently prepared, and pure, is *inodorous*, and *has no other taste* than that proper to *all the ferruginous salts;*

4. The colorless solution of proto-iodide does *not exercise any apparent action upon starch;* a single drop of the solution of the iodide of the Pharmacopœias immediately *strikes a blue color;*

5. If, after greatly dilating the solution of the solid iodide of the Pharmacopœias, it is tested by the yellow cyanide of potassium and iron, it immediately becomes a *deep blue.* The solution of the proto-iodide of iron, on the contrary, when well prepared, that is to say, when perfectly colorless, and not subjected to the influence of atmospheric oxygen gives with the same, *like all the protosalts of iron*, a precipitate of a bluish white.

To recapitulate, according to these characters, the *solid iodide of Pharmacy*, designated in the Pharmacopœias, and the formulæ under the name of *proto-iodide of iron*, should be considered as a mixture in variable proportions of—

Free iodine,

Periodide of iron, more or less mixed with proto-iodide, not yet decomposed,

Sesquioxide of iron.

The presence of free iodine, or at least of an iodide strongly

ioduretted, is proven by the odor of the compound, and the blue color produced with starch. The deep blue precipitate produced by the yellow cyanide of potassium and iron, demonstrates that the iodide is partly, if not wholly in a state of per, and not proto-iodide. As to the presence of the sesquioxide of iron, it does not naturally belong to it, but is the necessary result of the change which the proto-iodide undergoes from the action of the air. When we keep a solution of proto-iodide only two or three days, we percieve this oxide commencing to form as a reddish deposit. M. Dumas supposed that it was an insoluble combination of iodine and sesquioxide of iron.

The foregoing remarks suffice to prove that the iodide usually employed in Pharmacy under the name of proto-iodide of iron, is not a proto-iodide, but a mixture varying in composition, and consequently in therapeutic effects; it differs then essentially from the proto-iodide of iron, the administration of which has been followed by advantageous results in the treatment of phthisis pulmonalis. I may add that the former cannot replace the latter, clinical observation having proven that the least alteration in the colorless proto-iodide will suffice to weaken its medicinal properties, and to communicate an irritant action, which totally changes its effects.

With these explanations I proceed to the preparation of the proto-iodide of iron, and to the formulæ of which it is the basis.

In combining the elements of the preparations which have been made into formulæ, the object was to facilitate the means of varying the administration of the proto-iodide of iron, as well as to insure to this new remedy a perfect state of preservation.* In all these preparations, the *normal solution excepted*, the proto-ioduretted compound is free from contact

*I have proven, by clinical observation, this important fact, that the proto-iodide of iron, under whatever form it may be given, acts in an identical manner, whenever it has not suffered any change.

with atmospheric oxygen, either because it is in contact with carbonic acid, (carbonated water,) or enveloped in gum, or gelatine, or honey—substances which have the property of preserving the salts of the protoxide of iron from oxidation by contact with the air, from which a partial decomposition would result, that is to say, an alteration.

The first formula is that of the *radical* medicine, that is to say, of the preparation which I have constantly employed for the treatment of phthisis in the Hotel Dieu: it is for this reason that I have named it *the normal solution of the proto-iodide of iron.* I desire that physicians should prescribe it under this title, and for greater certainty, to add the name of the author, so that this medicine may not be confounded with the pretended proto-iodide of iron of Pharmacy, which, I repeat, is of the first importance in a therapeutical point of view.

This normal preparation serves as the base of all the others. I have taken care, at the end of each formula, to point out the proportion in which the normal solution enters into the resulting preparation; by this means, practitioners have it in their power to vary their prescriptions without departing from the proportions indicated in my therapeutical observations.

FORMULÆ.

Normal Solution of Proto-iodide of Iron of Dr. Dupasquier.

℞. Iodine,	10	grammes.
Iron filings,	20	"
Distilled water,	80	"

Introduce the whole into a small matrass, which is to be placed for eight or ten minutes in water heated to 70° or 80°, C., (but not boiling, for this will volatilise a part of the iodine.) Shake the mixture several times.*

*This preparation may be made in the cold, but we then experience a little more difficulty in obtaining a perfectly colorless solution. If we ope-

Remark.—As soon as the combination begins to be effected, the proto-iodide of iron formed completely dissolves the iodine, and the liquid becomes of a *reddish brown.* If we continue for some minutes to heat the solution, and shake the mixture, *the brown color disappears*, which indicates that the iodine and iron is completely combined. We may acquire an absolute certainty by filtering the liquid, which should be perfectly *colorless*, or at least have an *almost imperceptible greenish hue.* When the liquor retains a red color, or only slight yellow, or even a deep green, it is indispensable to replace the solution on the iron, and retain it in contact until, on filtering, the solution shall pass without color.

The quantity of iron indicated in the formula, far exceeds what is necessary to saturate the iodine, since the proto-iodide of iron is composed of

1 atom iron, or	17.8
2 " iodine, or	82.2
	100.0

But this is of no consequence, as the iodine can dissolve only a limited proportion of the metal. My object in employing a great excess of iron, is to render the combination more rapid, and render certain in every case the complete saturation of the iodine, *even in inexperienced hands.* Experience has demonstrated, that even when equal parts of iodine and of iron are used, it is difficult to obtain a perfectly colorless solution. It is then more frequently of *a deep*

rate in this manner, we should proceed as follows: shake the mixture, then allow it to stand for some minutes; the iodine then reacts upon the iron, the vessel becomes strongly heated and combination takes place. We may facilitate this by two or three agitations, when the mixture has reached its highest temperature. On the contrary, if we constantly shake the mixture from the commencement, the mixture does not attain the same degree of heat, and the combination is longer in taking place.

green, by which we may recognise an iodide with an excess of iodine.

This preparation should be made extemporaneously; it does not answer to keep it; left only for an hour in contact with the air, it begins to alter; one part of the iron absorbs oxygen, and is precipitated as a sesquioxide; the iodine, which is hence set free, is dissolved, and communicates to the liquid a reddish brown color, the more intense in proportion as the decomposition proceeds. The decomposition of the proto-iodide of iron takes place in a full and well stopped bottle, which may be explained by the decomposition of water effected by the action of protosalt of iron.

Practitioners should not prescribe the normal solution by drops, since it cannot be preserved; neither can it be kept in a diluted state, as a potion or tisane, for, even in these mixtures, its alteration is very rapid.

2. *Syrup of Proto-iodide of Iron.*

℞. Normal solution of proto-iodide of iron, 4 grammes.
Colorless and very thick syrup of gum, 200 "
Syrup of orange flowers, 50 "
Mix exactly by shaking for some moments.

Remark.—It is indispensable that the syrups of gum and orange flower should be colorless, that the physician may have an assurance that the medicine is not altered. It is also useful to give to these syrups more than ordinary consistence, that the normal solution may not render them too fluid; a circumstance which would facilitate the alteration of the protosalt by contact with the air. Maintaining this precaution, the syrups of the proto-iodide of iron may be preserved for a month, and even longer; a necessary circumstance for a patient who is distant from an apothecary.

Each spoonful of the syrup represents very nearly four drops of the normal solution.

We may mix, without inconvenience, this syrup, but only at the moment when it is to be taken, with a cupful or half a

glass of milk, of seltzer water, of barley water, oat meal water, &c.

3. *Carbonated Water of Proto-iodide of Iron.*

℞. Normal solution of proto-iodide of iron, 1 gramme.
Seltzer water, 1 bottle.
Syrup of gum, 80 grammes.

Open the bottle of seltzer water, throw out promptly an amount equal to the syrup and solution mixed, pour in both the latter, and carefully cork the bottle. Shake the bottle for some minutes to mix the ingredients.

Remark.—We may have carbonated waters of proto-iodide of iron No. 1, 2, 3, and 4, by increasing, in the following manner, the proportion of the iodide.

Carbonated water, No.	2,		2	grammes	proto-iodide.
" "	3,		3	"	"
" "	4,		4	"	"

The operation should be conducted as rapidly as possible, to prevent too great a loss of carbonic acid.

The patient, during the day, must take at least the whole of the liquid contained in a bottle; if he dislikes to drink so much, a half bottle of seltzer water may be used, without changing the proportion of the normal solution; it is only necessary to diminish the amount of syrup.

4. *Marmalade of Proto-iodide of Iron.*

℞. Normal solution of proto-iodide of iron, 15 drops.
Honey of Narbonne, 50 grammes.

Mix.—To be taken by teaspoonfuls in the course of the day.

Remark.—We may gradually increase the dose of the proto-iodide. If the mixture should be too fluid, part of the honey is to be replaced by powdered sugar.

This marmalade may be flavored according to the taste of the patient, as for example, with vanilla.

5. *Pills of the Proto-iodide of Iron.*

℞. Iodine, 8 grammes.
Iron filings, 16 "
Distilled water, 25 "

To be prepared like the normal solution, then filtered, and poured into an untinned iron cup. Add afterwards,

Honey of Narbonne, 20 grammes,

evaporate rapidly, until a large part of the water of the proto-iodide has evaporated, that is, until the mixture acquires the density of a clear syrup; add afterwards, by little and little, continually stirring with a spatula,

Powdered tragacanth, 12 grammes.

By the process indicated, there will be obtained a mass of a suitable consistence, which may be divided into 200 pills, each weighing nearly 20 centigrammes.

Each pill represents very nearly four drops of the normal solution.

Remark.—These pills remain unaltered for a long time. It is also easy to ascertain whether they are well prepared; and if their preservation is perfect, it is sufficient to cut one of them into thin slices by means of a knife; the slices should be colorless and slightly translucent.

The pills of proto-iodide of iron may replace with advantage those of Vallet and of Blaud, in the treatment of chlorosis.

6. *Lozenges of Proto-iodide of Iron.*

℞. Normal solution of proto-iodide of iron, 20 grammes.
Mallows paste, a quantity sufficient to make 200 lozenges.
Pour the solution into an iron cup, and add

Powdered sugar, 32 grammes.

Heat. When the syrup has acquired the proper consistence, mix it rapidly with the paste, and divide into lozenges.

Each lozenge contains about one drop of the normal solution.

Remark.—It would appear to be more simple to add the normal solution to the paste, and then give it the consistence it requires, by incorporating the powdered sugar; but I have remarked that the proto-iodide is oxidised during this preparation, and that we obtain a paste colored of a yellowish brown. The lozenges when well prepared, should be without color.

7. *Jelly of Lichen, with Proto-iodide of Iron.*

℞. Normal solution of proto-iodide of iron, 30 drops.
Jelly of lichen, 100 grammes.

Take the liquid which is to make the jelly before this is prepared; or, which is better, liquify the jelly by a gentle heat, then add the solution of proto-iodide of iron. Afterwards place the liquid in the cellar, until it acquires a gelatinous consistence.

The dose of the proto-iodide may be gradually increased.

8. *Enema of Proto-iodide of Iron.*

Normal solution of proto-iodide of iron, 15 to 20 drops.
Solution of gum Arabic, somewhat viscid, half a pint.

Mix.—For two half enemata, one to be taken in the morning, the other in the evening.

Remark.—This mode of administration may be used when the patient has great objection to the taste of the medicine, or when the stomach is offended by it, which is rare. It is also a means of employing the proto-iodide of iron without the knowledge of the patient.

If the intestine rejects the liquid, as sometimes happens, it is proper to add to each half enema three to six drops of

laudanum of Rosseau; this is also suitable when diarrhœa exists.

Whatever form of administration may be adopted, the normal solution should be given, at first in the dose of fifteen drops per diem, and gradually increased to one hundred and twenty drops.

I use as adjuncts to this treatment the employment of tonics, such as Bordeaux wine, the stomachic elixir of Hoffman, wine of cinchona, the extracts of marsh trefoil, of the lesser centaury, of the blessed thistle, of germander, &c.; at the same time the patient uses a strengthening diet, composed principally of roast meats, either beef or mutton.

To obtain the best results perseverance is necessary. A slight diarrhœa, or gastric irritation, should not prevent its continuance. It is only proper to suspend it when the oppression is very great and there is danger of suffocation.

Journ. de Pharm.

ART. XXVIII.—ON MANNA.

The tree which produces the manna (*Fraxinus ornus*) is an ash of a peculiar quality, and is regarded by Linnæus as a variety of the common ash. It is indigenous in the south of Italy and in Sicily; and the following account of it, as well as of the processes by which the manna is obtained, is taken chiefly from the "Voyage Pittoresque des Isles de Sicile, de Malte, et de Lipari. Par Jean Houel, Peintre du Roi, en 1776." The tree rarely attains a greater height than twenty-five feet, and there is nothing particularly striking in its appearance: it might, on the first view, be taken for a young elm; but, on more minute examination, its particular character is found in the manner in which the leaf is attached to the branch. Three species, or, more properly, three varieties of this tree have been observed. The first has the leaves long and straight, like those of the peach; in the second, the leaves strongly resemble those of the rose-tree; and the third seems intermediate between these two varieties.

It is when the season is at the warmest that the tree most abounds in sap. Therefore, about the 15th of August the people begin to make their incisions in the bark. They commence at the foot, making an incision each day, over the preceding, and at the distance of two inches from it, until they reach the lower branches. The incisions are little more than two inches in horizontal length, and are about half an inch in depth. When the season is favorable, they continue to make their incisions so far as the great branches; but though they make no more than one daily, they have, towards the end of September, already made forty-five, which at two inches distance between them, gives an elevation of ninety inches; and as there are few trunks which are more than seven and a half feet high, they rarely go to a greater distance.

When the knife has with some difficulty made an incision

in the tree, the manna begins immediately to flow. It at first is no more than a limpid water; but it gradually congeals as it flows, and is soon hardened to a consistence. The rainy season, which comes on at the end of September, interrupts this work. The heat is then not sufficient to dry the juice, and the rain soon detains it at the foot of the tree, so that it is necessary that the operations should conclude with the warm weather of September.

Having given this general statement, we may proceed to describe more particularly the process which is followed in collecting the manna. When an incision is made in the manna tree, a leaf of the same is inserted, by the extremity, in a slight horizontal cut below the incision. The juice which exudes from the tree flows upon this leaf which, like a pent-house, conducts it to a vessel placed below. This vessel is very simple, being merely a leaf of the Indian fig-tree, which, in drying, takes the form of a basket, or rather a shell. It is from ten to twelve inches long, and seven or eight in breadth, and forms a sort of vase, sufficiently capacious for the use to which it is applied. Placed at the foot of the tree, it receives the juice, which does not harden until it has remained there some time. The manna thus received and congealed is much more esteemed than that which escapes down the bark of the tree, which is less pure and less fit for use. This latter comes in great quantity when the operation of nature is in its full force. It takes the form of icicles or of knotty reeds attached to the tree, full of inequalities and large in proportion to the abundance of the juice. Being sweeter than the purer sort, it is much more in requisition, and is especially preferred by the English. The two sorts, however, are most usually mixed.

M. Houel states, that he often tasted the manna as it flowed from the incisions. It then had a bitter taste, like that of some unripe fruits. This bitterness is owing to the watery matter, the evaporation of which concentrates the sugary parts and leaves them more sensible to the taste. The manna

is then sweeter and more agreeable, but is at all times slightly nauseous.

Men and women are indifferently employed in collecting the manna. The same knife which makes the incision serves also to gather the manna. The collected manna is deposited in baskets and carried away to the magazine where they dispose of it, and whence it is sent away in great quantities to foreign countries.

If the season is not favorable—if the heat is not steady and without rain—the people complain greatly; and if there appears the least disorder in the atmosphere, the saints and the madonnas are assailed with cries and tears from all parts, prayers are addressed to them, and wax tapers are offered at their shrines, for the grant or continuance of fair weather.

The manna formed a principal source of emolument to the parts of Sicily in which it was cultivated in the time of M. Houel; and the inhabitants were distinguished from those of other parts of that country by their comfortable and pleasing appearance. The medical properties of manna are those of a gentle purgative, particularly adapted to the use of children, and it was accordingly much employed formerly in medical practice. But it has now gone nearly into disuse, as we are in possession of so many substances that are more efficacious. This circumstance has probably had considerable effect on the prosperity of the places which were formerly enriched by the culture of the manna tree. The drug was some time since subjected to chemical analysis by M. Bouillon la Grange, who found it to consist of two distinct substances, one nearly resembling sugar, and the other probably analogous to gum or mucilage, as, when treated with nitric acid, it was found to yield the mucous acid.

We may be at liberty to doubt the following pretty story concerning manna, even though we find it in Jeremy Taylor. "When the kings of Naples enclosed the gardens of Œnotria, where the best manna of Calabria descends, that no man might gather it without paying tribute, the manna ceased till the tribute was taken off, and then it came again; and so,

when after the third trial the princes found they could not make their gain of that which God made to be common, they left it as free as God gave it."

Penny Magazine.

ART. XXIX.—ON BELLADONINE. By PH. LÜBEKIND.*

M. BRANDES having demonstrated, by his experiments, that the leaves of the *Atropa belladonna* contained two new organic bases, one of which is solid and crystallisable, and the other volatile, and possessing strong analogy to ammonia. M. Brandes having completed his researches, M. Lübekind continued them under the direction of Prof. Lowig. M. Lübekind took thirty pounds of the dry leaves of *belladonna* and distilled them in an alembic of tin, with twelve pounds of caustic potassa. To the product of this distillation he added, drop by drop,† chloride of platinum; in place of a granular powder, crystallised in otohedra, he obtained a white precipitate, not crystallizable, and readily soluble in ammonia. This white precipitate was mixed with two parts of pure dry carbonate of potassa; the mixture was introduced into a retort, and slightly heated. It suddenly acquired a somewhat black color, and disengaged carbonic acid, while in the upper part of the beak of the retort a white sublimate appeared; this is pure *belladonine.* In the disengaged gas he recognised, by odor only, hydrochloric acid, although chlorine was not detected in the sublimated matter, even after exposure for several hours in a place heated to 35° or 40°, C.

Belladonine has a great analogy in its odor to ammonia. It is but slightly poisonous; taken fasting, in the dose of two and a half grains, he experienced only a burning sensation of

* Dall. Archiv. der Pharm.

† Annuar. delle Scienze Chim. Pharm.

the throat, which disappeared when he had dined. This alkaloid dissolves entirely in water, and then possesses an alkaline reaction, which does not disappear on the application of heat like ammonia; it neutralises acids, and forms a series of salts. The analysis of this substance, by means of the apparatus of Mittscherlich, yields *carbon*, *nitrogen*, *hydrogen* and *oxygen* in proportions not yet determined.

Lowig considers this base as formed of two compound bodies, because it is decomposed by nitric acid, with frothing, caused by the disengagement of carbonic acid. In every experiment to which it was submitted, it appeared to contain nitric acid. If this substance is heated, it fuses, with disengagement of ammonia and nitrogen, and there remains a white residue, which volatilises with difficulty in yellow crystals, and gives out an odor like that of cyanogen; by trituration with hydrate of lime, there is no disengagement of ammonia. Hydrochloric acid exercises a like reaction, which gives rise to another yellow substance, crystallisable in rhomboids, with an acid taste, and burning luminously when fusion is attempted in a glass tube; a solution of nitrate of silver does not produce any precipitate in this singular compound. Neither lime or potassa develope ammonia; and the strong odor of this gas is not perceived when it is fused with caustic potassa.

J. de F.

Journ. de Pharm.

ARTICLE XXX.—UPON POISONING BY CONCENTRATED ACIDS; AND THE FIRST REMEDIES TO ADMINISTER.

By A. Chevallier.

My object in publishing an article on poisoning by concentrated acids, is not to elicit discussion. I admire not this kind of contention, and have often shown evidences of this feeling. But, first, to draw the attention of men of science to opinions thrown out upon the subject of the remedial substances to be administered in case of accidents from concentrated acids, and to induce them to publish the observations they have collected in the course of their practice. Second, not to leave uninformed, the persons who, as pharmaceutists, are called upon to administer the first remedies to individuals who either intentionally, or by accident, have been poisoned by such concentrated acids as sulphuric, phosphoric, nitric, and hydrochloric. Third, to establish the point that, in the different works which I have published, I have not been in error in pointing out the employment of alkalies, and especially magnesia, as an antidote to these acids.*

To the present time, the greatest number of practitioners have agreed that the first assistance to be given for poisoning by acids, consists in the administration of alkalies, and parti-

* An apothecary of Paris, M. Dupuy, who lives in a quarter where there are a great number of bleachers, has several times been called upon to render assistance in cases of poisoning by blue liquid. He has obtained constant success by employing carbonate of magnesia. He gives this salt in preference to magnesia, because the carbonate produces vomiting at the same time that it neutralizes the acids.*

* We have been informed of a case which, from a similar cause, occurred in this city, where the individual had recourse to a profuse draught of chamber lie, used in the establishment, with the same result as above,—ammonia, in this case, was the neutralizing agent.—*Ed. of Am. Journ. Pharm.*

cularly decarbonated magnesia!* Numerous facts appear to demonstrate the good effects derived from this mode of medication.

Now it is attempted to be established that this mode of practice is not rational, and that it is necessary to follow another method. It is supposed that all the acid taken in is at once absorbed; and it is asserted that the acids are cold or hyposthenic poisons, and that it is necessary, 1st, to cause the subject to vomit, by irritating the throat with a feather; 2d, to cause him to drink, without delay, pure wine, mixed with warm broth; 3d and lastly, to add magnesia with the drink, if it is supposed that any now absorbed acid remains in the stomach.

We do not attach more importance to the employment of one method of treatment than to the other, but we think that the method which ought to be adopted is that which facts have demonstrated to be followed with success; now, if we consult authors who have published observations of poisoning by the concentrated acids, it will be seen that in the majority of cases, the alkalies, when they have been employed in time, have saved the patients. If we search for the facts, which will allow the results of the new method to be studied, they are found not to be numerous, at least within our knowledge. What ought we to conclude, then, from these researches? It is, that we ought to employ the method which is most certain, and that we should not make experiments upon man to establish the value of different methods.

We think that experiments made upon animals might elucidate the question; we at least express the wish that they should be tried by the individuals who are anxious to establish that the anti-hyposthenic method should prevail over the method by saturation.

To allow our readers an opportunity to study the facts, we shall indicate here, 1st, the cases of poisoning by concentrated

* Lunding, *De olei vitrioli et aquæ fortis turgitur ingestorum sequelæ earum que cura*, (Copenhagen, 1821,) has proposed to employ mucilaginous drinks, after the method of the ancients. He says that sometimes neutralizing agents are injurious.

acids, which have fallen under our observation, and in which the method by saturation has succeeded. 2d, the cases in which autopsy has demonstrated that the acids are not absorbed, as has been pretended.

Cases of poisoning treated successfully by alkalies, or substances capable of saturating the acids.

The first case that we shall cite was observed in 1825, by M. Correa de Serra, Jr. Madame V. J., seamstress, having swallowed, by mistake, two ounces of concentrated sulphuric acid, was treated by means of magnesia; she was saved, but for a long time remained affected by the disastrous consequences of the cauterization of acids.—*Journ. de Chimie Med.*, to. ii, p. 210.

The second has been stated by M. Gabriel Pelletan, in 1825. M. N., aged 29 years, made an attempt to poison herself by blue liquid, (a solution of indigo in concentrated sulphuric acid.) This blue had been diluted with water. Calcined magnesia secured results so beneficial, that the patient was promptly relieved and cured.—*Ibid*, to. i, 2 ser, p. 11.

The third has been communicated to us by M. Lalande, a pharmacien at Falaise. M. Fert, a dyer, having swallowed, by mistake, a glass of concentrated sulphuric acid, magnesia was administered to him; the first symptoms were arrested, and the individual was saved.—*Ibid*, to. iii, 2 ser, p. 439.

The fourth was observed in 1837, by M. Emery. A young woman was carried to the hospital St. Louis, ward Napoleon. She was treated by magnesia, and this treatment, which gave rise to some purgation, removed the symptoms; the patient left the hospital cured.

The fifth case is very recent. A servant of M. M***, having taken sulphuric acid for wine, drank a certain quantity of it; magnesia was immediately administered; in a little time she was in a fit state for her duties; but she still lives upon milk.

Poisoning by Nitric Acid.

I have had occasion to observe two cases of poisoning by nitric acid.

The first in 1820, or 1821, at the hospital of La Pitie. A young jeweller was carried to this hospital; he had swallowed, in consequence of disappointed love, very near half an ounce of aqua fortis. Scarcely had he arrived, before a dose of calcined magnesia was administered to him. This calmed the symptoms, and ten days afterwards he left the institution. This workman for a long time remained remarkably meagre and emaciated.

The second, in 1828, or '29. We were informed that a young woman had, in consequence of disappointment, poisoned herself with nitric acid. We immediately repaired to the patient; administered to her, almost by force, at least four ounces of calcined magnesia, mixed with water. The symptoms were relieved, and the patient very speedily cured; she still lives, as but a short time since we have met with her.

These facts demonstrate, in our opinion, that magnesia is the antidote of the acids, and ought to be employed in cases of poisoning by them.

Are the Acids absorbed in cases of Poisoning by them?

In referring to works which have been accessible to us for information upon poisoning by acids, we are enabled to state, that when poisoning by an acid takes place, the acid is not absorbed, but remains upon the tissues. In fact, 1st, the examination of the stomach and intestines taken from the dead body of *Cuiquin*, who died at Montmartre, in consequence of the ingestion of sulphuric acid, October 6, 1835, has evinced that the organs contain a very great quantity of free sulphuric acid, which had not been absorbed.—*Rapport Judiciaire, du October* 27, 1835.

2d. The examination of the stomach and intestines of M. Doré, who died of poisoning by sulphuric acid, has shown that the stomach contained a great quantity of free sulphuric

acid which had not been absorbed, and that a part of the intestine contained the same free acid.—*Rapport Judiciaire, du 7 Janvier*, 1838.

These facts demonstrate, in our estimation, that in poisoning by concentrated acids, the acid is not absorbed, and that it is necessary, in cases of poisoning by the acids, to destroy them by means of an absorbing substance.

We may be told, it is true, that here we do not operate in a capsule, in a retort or alembic, (it is the common remark of all those who oppose the application of chemistry to medicine.) We reply to it, that poisoning has occurred from quantities of acids sufficient to occasion death; the antidote has been administered; the patient has been saved: what more can be asked?

We shall terminate here what we have to say upon the subject, and we await, in order to believe that we ought not to administer the alkalies or the alkaline carbonates, in cases of poisoning by the concentrated acids, the demonstration by positive facts, 1st, that it is possible to save the patient by other methods. 2d, that these methods are preferable. 3d. that the acids taken into the stomach are entirely absorbed, which appears not to have taken place, if we rely on the examination of organs taken from subjects who have perished by their introduction.

Journ. de Chimie Med.

ART. XXXI.—SELECTIONS FROM ROYLE'S PRODUCTIVE RESOURCES OF INDIA.

CULTURE OF PEPPER IN THE CIRCARS.

The desire of Dr. Roxburgh to make his scientific discoveries tend to practical purposes is conspicuous in his endeavors to cultivate Pepper in the Circars, and in the number of useful plants which he introduced into the Company's Pepper plantations established at his recommendation in the neighborhood of Samulcottah. As the origin and progress of this attempt at a new culture are productive of some useful lessons, we may enter a little more into detail than would otherwise be necessary.

Dr. Roxburgh himself states in a letter, dated Samulcottah, 25th August, 1788,—"Since the end of 1781, I have been stationed here, and as soon as I became a little acquainted with the Seasons, Soil, and Produce of the country hereabouts, I formed an idea that Pepper and Coffee would thrive as well in this Circar as in any part of Asia; my natural turn for Botany, Agriculture, and Meteorological observations, enabled me to form the idea upon pretty certain grounds." But, on the 25th April, 1786, he had written, "I have the pleasure to inform you, that since my return I have, for the first time, discovered that Black Pepper is found growing wild in some parts of the hills to the north-west of this; the natives of these hills bring small quantities frequently down to the plains to sell." Mr. Ross, in a letter to Sir A. Campbell, Governor of Madras, in reference to some samples of this pepper sent by Dr. Roxburgh, and which the latter described as equal to, if not better, than the best Malabar or Ceylon pepper, says, that "on comparing it with the pepper from the Malabar coast, which is here in the shops for sale, the shopkeepers say that the former is at least ten per cent. better in quality." Mr. Ross further writes (13th Aug., 1786,) "The most particular orders were given in time to the Chief and Council of Masulipatam, to furnish Dr. Roxburgh with all the necessary dis-

bursements, to enable him to proceed, and to give orders to the zemindars to assist and encourage the undertaking." The Court of Directors, moreover, in the General letter to Madras, dated 22d April, 1789, expressed their approbation of the undertaking,* and ordered that every encouragement and assistance should be afforded to Dr. Roxburgh.

The Pepper was brought for sale to Cottapilla, at the skirts of the hills; but the Plants were procured from Rampa, about thirty miles within them, and about fifty directly north from Samulcottah. It was afterwards discovered growing wild in almost every valley amongst the mountains, immediately north of that station. The plantations were established about six miles inland from Samulcottah, and about eight or ten miles from the nearest point of the sea, where they were sheltered by innumerable clumps of mangoe-trees. About five hundred slips were first obtained. These, by the end of 1787, had formed four thousand plants, which at the end of the second year had increased to forty thousand in number, the props being formed chiefly with the branches of the Moochy-tree (Erythrina indica.)

On the 17th July, 1790, Dr. R. writes, "I have brought this species of culture to such a pitch of perfection as must convince every person, that the Pepper-vine will thrive as well on this coast as in any part of India." The rate of its productiveness had, however, yet to be ascertained; but before they were old enough for this purpose a difficulty arose, from Dr. Roxburgh discovering that, instead of the real Pepper plant of Sumatra and the coast of Malabar, (Piper nigrum of botanists,) he had found a new species, which, though yielding an equally good Pepper, was more difficult of culti-

* "In our letter of the 31st July, 1787, we approved of the measures you had taken to assist Dr. Roxburgh in the cultivation of Coffee and of the Pepper plant in the Rajahmundry Circar; but for want of information, &c., we could not decide how far it was a measure meriting our further encouragement. Having since received this information, and likewise the most favorable accounts of the success of the undertaking, we now order and direct that you afford Dr. Roxburgh every encouragement and assistance in your power, in the cultivation of such useful articles of our commerce, particularly that of Pepper."—Oriental Repertory, i. p. 24.

vation. This was in consequence of the male and female flowers being on different vines, and there being a third kind, with hermaphrodite flowers, or hermaphrodite and female flowers mixed, on the same catkins. Hence Dr. R. has called this species Piper trioicum, which he had taken for the true Pepper-plant before he had an opportunity of seeing that famous plant. The natives had increased the difficulty by supplying him in the first instance only with the barren plants. The pepper of the second kind had less pungency than common pepper, but the third sort ripened perfectly, and when dry was exceedingly pungent. Dr. R. was equally unfortunate with the pepper which he sent to this country by a private hand to have its value ascertained, as it was seized by the Custom-house officers.

Into the Pepper plantations Dr. Roxburgh also introduced Coffee, Cinnamon, Nutmeg, Annatto, and Guinea Grass; also the Bread-fruit tree, which had been found growing luxuriantly in Cochin, called by the Dutch, Maldivy Jack; and also mentions having "thousands of young Sappan-wood trees in the Company's Pepper Plantations." He introduced the Teak into the low grounds of the Circars, though it was common in the hills of the Rajahmundry Circars, recommending its being planted in every vacant corner; and mentions that Lord Cornwallis and Col. Kyd had been for some time introducing it into Bengal. He also procured the eggs of the Sile-worm, and proposed its culture in the Circars, as the Mulberry grew there most luxuriantly from cuttings; and obtained copper sugar-boilers from Bengal, in order to try and improve the quality of the Sugars. His paper on the culture and manufacture of sugar in India is among the most interesting which has been published.*

* An Account of the Hindoo method of cultivating the Sugar-cane, and manufacturing the Sugar and Jagary, in the Rajahmundry Circar, interspersed with such remarks as tend to point out the great benefit that might be expected from increasing this branch of Agriculture, and improving the quality of the sugar; also the process observed by the natives of the Ganjam district in making the sugars of Barrampore. By Dr. William Roxburgh, Samulcottah, 20th June, 1792.

CULTURE OF COCHINEAL IN INDIA.

Dr. Roxburgh further mentions having received slips of the Cactus or Opuntia, obtained by Sir Joseph Banks from the Royal Gardens at Kew, and sent out by the Court of Directors, which, he states, grew astonishingly. Attention had been called to this subject by Dr. James Anderson, physician-general of the Madras army, who was distinguished as much for his professional attainments as for his constant attention to whatever would afford employment to the natives, and improve the productive resources of the country. Dr. Anderson had found an insect, which he imagined to be a kind of Cochineal, and with which he had dyed pieces of Flannel, Shawl, and Satin. Specimens were forwarded to the Court of Directors, and by their order subjected to various experiments, but were found to be entirely useless in dyeing.

Sir Joseph Banks obtained similar results, but having ascertained (22d May, 1787,) that the specimens sent him were those of a real species of Coccus, he conceived the idea that the true Cochineal might easily be cultivated on the Coromandel Coast, as the "climate was as good as that of the West Indies (where it had been introduced;) the soil suitable to the production of the Cactus with few spines, and labor as cheap if not still more so, than in Mexico."* The Committee of Warehouses of the Court of Directors were led to entertain the same view, as they state in April, 1788.—"The supposed discovery of Dr. Anderson in the environs of Madras, which, although unsuccessful in the issue, has, nevertheless, led your Committee to conceive that the Insect may very successfully be introduced and propagated in the British settlements in India, to the advantage of the natives, the Company, and the British nation, by giving to the former a new article of Cul-

* Letter to Sir Joseph Banks, Bart., P. R. S., on the subject of Cochineal Insect, discovered at Madras; 1788. By James Anderson, M. D., Physician-General, Madras.

ture, to the second an additional article of Commerce, and to the latter a participation in a lucrative article of Trade, which has hitherto been enjoyed unrivalled by a neighboring power." At their recommendation sealed orders were given to the captains of some ships proceeding to the Brazils, to procure, if possible, some of the real insect, and carry it to the coast.

Dr. Anderson was in the meantime permitted to establish, with Dr. Berry placed under him as superintendent, a garden to be called the Company's Nopalry, for the cultivation of the several kinds of Cactus, on which alone the true Cochineal feeds.

Plants of Cactus were obtained with considerable difficulty. One species, extremely common in many parts of India, was undervalued as being thought unsuited to the insect. It is called by the natives *nag-kalli* and *nag-phunee*, and by Dr. Roxburgh *Cactus indicus*, being thought to be indigenous; but it was probably introduced by the Portuguese. Plants were also obtained from Canton, Manilla, and the isle of France, as well as from the Kew Garden. All these four, Dr. Anderson states, were alike in appearance. In the course of three years, there were not fewer than two thousand Opuntia plants in the Hon. Company's Nopalry—all obtained from the few Kew plants. Specimens were distributed throughout the Presidency, as well as sent to the Botanic Garden at Calcutta.

Attention having thus been turned to the subject, the Cochineal insect was obtained by Capt. Neilson, of H. M. 74th Regt., on his return to India in June, 1795. When the fleet in which he sailed repaired for refreshments to the coast of Brazil, Capt. N., in his walks at Rio Janeiro, saw a plantation of Opuntias, and obtained several plants with the insect on them.* Many of them died during the passage to Bengal; and a few only remained alive on the last plant, of which se-

* Miscellaneous Communications, by James Anderson, M. D., Physician-General, Madras, from March, 1794, to October, 1796.

veral of the leaves had withered. Capt. N., on his arrival at Calcutta, sent the survivors to the Botanic Garden, where they were placed on the several species of Cactus, or Opuntia. On the China and Manilla species of the Nopal, and even on that from Kew, the survivors began to die fast. It fortunately occurred to make trial of the indigenous Opuntia, on which they were luckily found to thrive amazingly; and so rapidly, that Captain Neilson himself writes, on the 3d August, 1795, that he had the day before seen at the Company's Garden near Calcutta about one thousand fine plants covered with the insects: enough to stock all India. He hopes that Dr. Anderson had received the plants and insects sent by Dr. Roxburgh; and expresses his intention of bringing a fresh supply, with the hopes of "seeing in a very few months the plant and insect an object of cultivation over all the Carnatic, which I am inclined to think a more favorable climate for it than that of Bengal." Capt. N. concludes by saying, that great numbers of gentlemen in Bengal have already begun Nopal Plantations; and that Dr. Roxburgh had sent the insect to different parts of the country.

The insects sent to Dr. Anderson were delivered over to Dr. Berry, Superintendent of the Company's Nopalry at Madras, who, on the 26th August, reported, that the climate seemed most congenial to them in all exposures, as they had gone through all their stages from 28th July to the 24th August. He found the same want of success with the foreign, and, as in Calcutta, was obliged to have recourse to the country Nopal. As this was common everywhere, the culture and collection of the Insect very rapidly spread, particularly as the Collectors of Revenue were each furnished with a small quantity, and directed to exert themselves in the most strenuous manner; also to enclose spots of ground fifty or sixty feet square at some of the villages under each collectorate. On the 8th December, 1795, Dr. Berry further reported, that this Cochineal dyed casimere, cloth, and flannel with a color equal in brightness to the best scarlet, but that four times the quantity of the Sylvestre Cochineal reared in India was required

to produce the same color as that produced by the Grana Fina Cochineal of Mexico. In March, 1796, the Madras Government having determined to hold out the most solid encouragement to the cultivators of Cochineal, offered one pagoda per pound for the Cochineal, to such of the natives as might be disposed to employ their industry in its culture, this being considered by Dr. Berry an allowance liberal enough to encourage the cultivation.

Specimens of the insects collected and dried, both on the coast and in Bengal, were sent to the Court of Directors.* These specimens were submitted to examination by the best judges of the commodity in England, who all agreed that it was the Sylvestre, or wild species; and that there was little prospect of its being cultivated to any advantage for the supply of the Europe market, unless it could be offered at about one-third of the price of the Grana Fina, or at from 5s. to 6s. per pound, freight and all charges included.

The Madras Government had collected, in September, 1797, 21,744 lbs., and fresh supplies were then coming in, at the average price of nearly one pagoda per pound. By a statement, showing the issue of the sales of the Madras Cochineal in England in the years 1797, 1798, and 1799, it appears that 55,196 lbs. were sold at an average of 8s. 8¼d. per pound, which was little more than its prime cost in India. In 1807, the management of the purchase of Cochineal at Madras was transferred to the Board of Trade, who reported that since the date of the Court's letter of September, 1800, with the above statement, 73,366⅛ lbs. of Cochineal, amounting to pagodas 40,883:14:29, had been sent to England; and that from the London Price Current, it did not appear to be an article of profit to the Company; and they, therefore, suggested the propriety of discontinuing the purchase, or reducing the price to two, and one rupee per pound. The Government, in reply to this date, directed purchases to continue; and in this deter-

*Memoir on the Bengal Cochineal, by Dr. N. Fontana.—Asiatic Annual Register, vol. i., 1801.

mination the Court of Directors expressed their concurrence in the following terms:—"As the prices which we have obtained for the Cochineal on sales have not been such as to reimburse the prime cost and charges, our sole reason for continuing to suffer a considerable annual loss upon this article, has been with a view to encourage the breeding of the insect, until it should become perfectly understood among the natives."

In 1807, Mr. William Webbe, of the Madras Civil Establishment, suggested through Dr. Anderson to the Governor in Council, the expediency of advertising a reward for the introduction of the Grana Fina, or real Mexican Cochineal, into India. The Court of Directors concurred in the reward offered by the Indian Government of two thousand pounds for this purpose.*

The details which have been given with respect to the Pepper and Cochineal cultivations are important, as showing that, even with the greatest energy in individuals, and the utmost necessary patronage in the Government, success is unattainable, unless equal precaution be taken with every part of an experiment. Here the utmost degree of success was obtained that was possible with the materials. The plants succeeded perfectly, but it is doubtful whether any of them was the true Cochineal-Cactus of Mexico; and, in fact, the Insects (certainly the inferior kinds) preferred the Cactus already in India to that which had been procured expressly for them, though this was found an excellent remedy for scurvy, and a vegetable for voyages at sea. The Grana Sylvestre Insect—unfortunately the only kind procured—being one-third only of the value of the Grana Fina, while the expenses of its cultivation, collection, and drying, were necessarily the same; the price also paid for the Insect being high, because intended as an encouragement in the first instance, made this culture, like all ex-

* Measures which have been pursued by the Court of Directors and the Government of India with a view to the introduction of the True Cochineal Insect into the British Territories in India.—Trans. Asiat. Soc. of Calcutta, vol. vi.; Appendix, p. 85.

perimental ones, more expensive than would be necessary when success was established. The results also appear more unfavorable than they actually are. The Cactus, instead of requiring the best grounds and garden culture, will flourish in the most sterile parts of the country, needing but little subsequent attention; and as women and children may be employed in the care and collection of the insect, the expenses should, therefore, not be great. The experiment was so successful with the Grana Sylvestre, that no doubt can be entertained respecting equal success with the Grana Fina Cochineal, whenever it can be introduced; and this, with the same care and no greater expense, would be so much more valuable as a dye, and as an article of commerce.*

With regard to the Pepper Cultivation, we have seen that complete success was not attained; in fact, as far as a profitable culture was concerned, the Pepper Plantation at Samulcottah was a failure. Every thing, however, appeared favorable, for the Pepper of the Hills was pronounced by dealers to be of excellent quality: the Garden was established close to where the plant was indigenous; and Dr. Roxburgh was a most careful, and at the same time skilful Superintendent; but at that time, never having seen the true Pepper plant, he mistook for it a nearly allied species, yielding excellent Pepper, but which for the reasons stated (p. 65) was more difficult of culture. Dr. Heyne, however, (v. infra,) has given a different reason for the want of success in the culture. He succeeded Dr. Roxburgh in the charge of the Pepper Plantations, and, having afterwards an opportunity of visiting Bencoolen, he made particular inquiries respecting the culture of Pepper in Sumatra. He learnt that the Malays plant the Pep-

* It is not easy to estimate the expenses of the experiment, as so many small gardens were established in different parts of the country: but those of the principal one at Marmalong, near Madras, were restricted to 200 pagodas a month: £500 was paid to the brother of Capt. Neilson; and 13,397 pagodas, 17 fanams, and 20 cash, to Dr. Anderson, in 1795, for disbursements, on account of the introduction of the Cochineal and Silkworm upon the coast.

per vine at distances of five cubits in every direction, and support it on pieces of the Mootchy tree (Erythrinæ, sp.;) that the Pepper grew luxuriantly where it had much moisture, and hence the vallies were the most favorable situations for Pepper gardens. After the first planting in September the vine required but little attention, being left to its fate for twelve or eighteen months, when it received a peculiar treatment, which Dr. Heyne thinks, is the cause of its great fertility. The whole plant, with all its branches, being then *buried* in such a way "that only a small arch of the stem remains above ground." From this arch new shoots soon sprout out, three or four of which are allowed to climb up the prop tree, and are expected to produce flowers and fruit in a year after this operation. Dr. Heyne supposes, that by this practice the strength and vigor of the plant,—by the multiplication of its organs of nourishment, the roots—being so much increased, it cannot only produce large crops of flowers, but bring the fruit also to its greatest perfection. The omission of this practice, Dr. Heyne supposes, was the cause of failure at Samulcottah, as he says, "the plants that were raised from cuttings seemed indeed to thrive well, and soon produced blossoms; but such as had male flowers only. To account for this circumstance, we supposed that the hermaphrodite plant had been withheld by the people who sent us cuttings from their hills, where pepper is cultivated to a small extent, when, in fact, we had *starved our plants into celibacy*. (Tracts, p. 402.) It would be an interesting and very useful experiment, as well as one easily put into execution, in any of the Botanic or Horticultural Gardens favorably situated in India, to ascertain whether the Malayan treatment applied to the Pepper Vine of the Northern Circars would make it more fruitful.

At the same time that so much pains was bestowed on the cultivation of the Pepper, Cactus, and Cochineal, considerable attention was also directed to the culture of the Mulberry and the Silkworm, as well as to that of Sugar, and to the intro-

duction of Indigo. But as these were attempted in consequence of their success in Bengal, their notice may be deferred.

It is interesting to observe, that even at this early period the indefatigable Dr. Anderson was employed in sending "Mauritius Cotton Seeds," as well as "Brown Cotton Seeds," to different parts of the Peninsula. The latter had been brought from Malta to India by Major Macdonald, Governor of Pénang, in 1796, who, in writing for some useful plants to be sent him, says, "I forward two boxes of plants from Mr. Smith, the Company's Botanist here, addressed to Dr. Heyne, Botanist at Samulcottah; No. 1, containing 360 plants of the India Rubber, and No. 2, 353 of the Dammar."

Dr. Heyne, so favorably known by his "Tracts on India," succeeded Dr. Roxburgh at Samulcottah, and afterwards acted as assistant to Col. Mackenzie, Superintendent of the Mysore Survey. He paid considerable attention to Botany, made a large collection of Plants, some of which are contained in the East Indian and Banksian Herbaria, and some were described by Roth;* but he chiefly studied Mineralogy, and his Tracts† are full of original information concerning the Rock formations, the Minerals, and Soils of the Peninsula. With respect to practical subjects, it is interesting to find him observing, that Potatoes were first introduced into the neighborhood of Bangalore and of Nundydroog by Col. Cuppage, and since 1800 by himself among the natives, whom, he says, "I was enabled by Government to supply with Seed Potatoes of the best kind from the St. Helena stock, and to offer them a sale for their produce, which, however, they soon found for themselves, in all parts of the country where Europeans reside.

* A. G. Roth, Novæ plantarum species præsertim Indiæ Orientalis ex collectione Doct. Benj. Heynii. Halberstadii, 1821.

† Tracts, Historical and Statistical, on India; with Journals of several Tours through various parts of the Peninsula, &c. By Benjamin Heyne, M. D., F. L. S., Surgeon and Naturalist on the Establishment of Fort St. George. London, 1814.

Since that time they have even supplied Madras, where their potatoes are preferred to those of Bengal."*

CULTURE OF THE POPPY IN INDIA.

Opium, so well known, and so extensively produced, need hardly be adduced as an instance of the physical capabilities of India for producing valuable commodities; were it not that the cultivation of the Poppy gives us an instructive lesson, not afforded by the other cultures successfully practised in India. Cotton, the Sugar-Cane, Indigo, and Pepper, are all indigenous products of the country, while the Poppy is a striking instance of the successful introduction of a valuable plant of more northern latitudes, into a hot country.

The history of the Poppy; and of Opium, its inspissated juice, are imperfectly known. Though extensively cultivated in India, the Poppy is also common in the gardens of England. Very good Opium has sometimes been prepared even in this uncertain climate, and in France and Germany it has been so very frequently. The Opium, so called Turkish, is chiefly collected in Asia Minor, and is exported to the extent of about 400,000 lbs. from Smyrna. It is produced at several places, at from ten to thirty days' distance in the interior; but that grown at Caisar, about six hundred miles from Smyrna, is the most esteemed for its cleanness and good quality. Besides this, other kinds of Opium are known in commerce, as that of Constantinople, and of Trebisond, as well as the Egyptian.

* Dr. Heyne not having had leisure to publish the results of all his observations, says, "I have in the mean time not been sparing in communicating my specimens to such as will be able to make them useful; and this, on the whole, was and is the primary object. It matters but little whether it be known by whom a thing is collected, provided it only be used for the good of the community. Many of my friends seem to be of the same opinion!" Tracts, Preface, p. vii.

The oldest notices of the Poppy are found in the works of the early Greek Physicians, where not only the plant, but also its juice, is mentioned. Opium, however, does not appear to have been so generally employed as in modern times, or the notices respecting it would have been more numerous and definite. It seems also probable that it first came into extensive use in Egypt. But, from having been so long and so generally cultivated in Europe, and the northern parts of Asia, the Poppy has spread, and become so completely naturalized in different countries, that it is now difficult to ascertain where it was originally indigenous. But, extensively as it is cultivated in India, it is remarkable that nowhere are even a few stray plants to be seen in a wild state; a sufficient indication that it is not a native of the country. This supposition is still further confirmed, by no other species of Poppy being found in the plains, though the Author discovered one in the mountains, and Mr. Griffith has sent the seeds of a species of wild Poppy from Caubul. The names of the Drug seem also to assist us in tracing its origin to countries beyond India. *Opium* is, no doubt, derived from the Greek *opos*, (juice;) which may also be the origin of the Arabic *afioon;* and this latter, of the Hindee *aphim.* According to Professor Wilson, the only S nscrit term for Opium, is *ahiphena;* this occurs in the Medical Dictionary, called the "Raja Nighanta," and has every appearance of being borrowed and adopted from the Arabic term. By the Chinese, as we learn from the Memorial of Heu-Naetse, Vice President of the Sacrificial Court, it is called *Afooyung* in the Materia Medica of Le Shechin, of the Ming dynasty.—(Correspondence relating to China, 1840, p. 156.)

The Poppy, not being a native of tropical countries, is not cultivated in India during the seasons which are characteristic of those climates, that is, during the hot weather or rains; but in what are the winter months of European climates, namely, from October and November to March. The great heat is then sufficiently reduced to allow of the successful cultivation, not only of this, but also of other valuable plants re-

quiring only the summer heat of northern latitudes; such as Wheat, Barley, and European Kitchen-garden Vegetables. As low temperatures enough occur throughout the plains of India, the Poppy may be successfully cultivated from Behar, even to the banks of the Sutlej, or in the several independent states of the partially elevated table land of Central India, which are usually comprehended under the name of Malwa. The Behar, or Patna Opium, has long been esteemed of the finest quality for the China market; but that of Malwa, containing a large proportion of the narcotic principle, has rapidly attained almost equal value. For this it is probably indebted to the climate of Central India; but the north-western provinces could no doubt produce it of as fine a quality; since a specimen prepared at Bareilly was found to contain the largest proportion of the narcotic principle. Some Opium prepared by the Author at Saharunpore, was pronounced equal to the best Turkey, for medical purposes, and this was very similar to some procured in the Himalayas. The latter is grown there much later in the season, and collected nearly in the same months as in Europe and Asia Minor, that is in May and June. It can, no doubt, be prepared of the best quality for the European market, both in the hills and plains, whenever it is thought desirable to do so.

Though in the preparation of many of the valued articles of commerce, the Hindoos preceded most nations, yet they have usually been surpassed, whenever European skill and energy have been applied to the improvement of these very discoveries. It is remarkable, therefore, to find that with Opium they should have attained complete success, and this, too, without the aid of European science. But in the preparation of Opium, nature does everything, and man has only to wait patiently and carefully to collect the secretions of her laboratory.

The cultivation of the plant, however, requires some degree of attention, such as good soil, manure, and also careful management of the irrigation. The strength of the juice depends upon the quantity of moisture, and also, as Dr. Butter has

shown, upon that of the dew which falls upon the surface of the capsule. A deficiency of dew prevents the proper flow of the milk, while an excess, besides washing off the milk, causes additional mischief, by separating the soluble from the insoluble parts of the Opium. This deteriorates its quality, as well as increases the quantity of moisture, which must afterwards be got rid of. This, together with the adulterations practised by the Ryots, causes the chief difficulties experienced by the Opium agents.

This dependence upon the state of the atmosphere will in many cases explain the greater or less facility experienced in the preparation of Opium of the best quality in different parts of India. Also, why though the soil being less fertile, it is easier to prepare Opium of fine quality in Malwa and the north-western provinces of India, than in Bengal. But the history of the Opium culture is as instructive as that of Indigo, though in a different way. The latter being an indigenous plant, has continued to be cultivated by the natives according to their own methods, while the manufacture of its dye has been improved by the application of European energy and science.

The Poppy, on the contrary, is a foreign plant, successfully introduced by the natives themselves, of which the produce requires care, but not science on their parts. It is well calculated though, to show the important results which may follow the introduction of a plant, suited to the soil and climate of a country. When the Poppy was first cultivated in India, is not known, but it had attained considerable importance in 1786, as there is a memorial of the Marquis Cornwallis of that date, respecting the best mode of deriving a revenue from Opium. In 1826, the Finance Committee estimated that the government might derive from it about £1,000,000 yearly of revenue.

The Poppy has been adduced as a remarkable instance of a foreign plant successfully cultivated in India, but chiefly on account of the lessons which may be drawn for the culture of

other plants from similar climates. For we are led to inquire whether it be so peculiar in nature, as to be the only useful plant from similar climates cultivable in India, or whether it may not rather be an instance which may be successfully imitated. Therefore that other plants, as important as articles of commerce, which like it succeed in the summer of European climates, may with equal success be introduced into the cold weather culture of the plains, or into the summer culture of the mountains of India.

ART. XXXII.—DETECTION OF ARSENIC.

By H. Braconot.

Having occasion, some time since, to search for arsenic in a jelly mixed with other food, I employed the ordinary means, that is, I boiled the suspected matter for a long time with water, and having separated the fat, attempted to filter; but I was able to obtain but a very small quantity of clear liquor. This was divided into two parts; to the first I added a solution of sulphuretted hydrogen, which did not alter the transparency, even with the assistance of hydrochloric acid and heat. Nevertheless, the liquid had assumed an orange yellow, which caused the suspicion that sulphuret of arsenic was held in solution by the gelatine. In fact, having ascertained that arsenious acid is soluble in alcohol, I poured a sufficient quantity of this liquid upon another portion of the filtered liquor. The gelatin was separated, and the alcoholic liquor, tested with sulphuretted hydrogen, gave an abundant precipitate of orpiment.

We know that sulphuretted hydrogen, although a very delicate reagent to detect minute quantities of arsenic, does not offer the same amount of certainty when organic matter is present. To obviate this inconvenience, it has been proposed

to use oxidising agents to destroy these, and to convert the arsenious into arsenic acid; but, besides these modes being very tedious, the new arsenical products generally present more difficulty in the endeavor to reduce the arsenic, than when we act on the arsenious acid itself.

Therefore it is proper, under many circumstances, to treat the organic matters containing small quantities of arsenic, first, by ebullition in water, and reduce the liquid to a small bulk; and afterwards add alcohol; we would then obtain a liquid which, no longer viscid, would promptly pass the filter, and in which reagents would readily reveal the presence of arsenic. The same alcoholic arsenical liquor may be introduced into Marsh's apparatus, without producing the frothy effervescence which always takes place when animal matter is present. In fact, we know, that to obviate this effect Marsh himself has proposed to pour upon the surface of the liquid some drops of alcohol or of oil.

Journ. de Pharm.

Nancy, November 13th, 1840.

ART. XXXIII.—CHEMICAL AND MEDICAL EXAMINATION OF THE BARK OF MONESIA.

By MM. Bernard Derosne, O. Henry, and J. F. Payen.

We are still uninformed as to the true vegetable which affords Monesia bark; the individual who has made it known to us, and who lived a long time in South America, having frequently had the opportunity of seeing its extract employed empyrically, succeed in serious diseases of the alimentary canal, especially dysentery, determined to bring it to Europe, in order to permit its properties to be studied. From specimens with which she has favored us, we have become acquainted with this bark. But she has not been enabled to communicate any information with respect to the family or genus to which the tree belongs. We have made research in all the Pharmacopœias and principal botanical works—have run over the collections of the Garden of Plants—have visited the conservatories of this great establishment, and finally, we have sought for information from persons especially engaged in natural history, and more particularly with woods and barks; in stating the result of our investigations, it will be judged whether it is our fault that we have not removed the obscurity which at present hangs over the origin of Monesia.

Monesia bark must be produced by a large-sized tree, for it is in pieces, some of which present a thickness of from six to eight millimetres; it is very compact, heavy, hard, and gorged with extract; its color is deep brown, when retaining its whole thickness; one of the surfaces presents a sort of grayish epidermis, which contrasts with the chocolate color of the cut surface; its fracture is short and not fibrous, as that of oak bark, cinchona, &c.; its taste is sweet at first, and sugary, but soon after becomes acrid and irritative to the throat.

The name under which it has been presented to us is Monesia, and at the start, we should state that it has no connection with the genus monetia, or manetia, of the family of Rubiaceæ. The unsatisfactory information transmitted to us, has induced us to suppose that the tree which furnishes it may be a *Chrysophyllum* of the family of *Sapoteæ*, yet this opinion has met with several opponents, in the number of which, we believe, we may count MM. Guillemin, and Lemaire Lizancour. M. Guibourt having received from different persons some pieces of a bark known by the name of *buranhem*, has supposed that he recognised it as Monesia; he thinks, also, that the extract which has been sent him under the name of *Extract of Mohica*, by M. Martins, may, indeed, be produced by the same bark; the same as that to which M. Isid. Bourdan has devoted an article in the *Journal des Medicins*, published in 1835.

Other travellers have thought that Monesia might be the bark of the *Rhizaphora gymnorrhiza*, L., the *Bugiera gymnorrhiza*, Lam. But other information induces us to believe that this opinion is not well founded. It has also been suggested, that the *Cortex braziliensis* of the Pharmacopœia, *(Acacia cochleocarpa, Martins,)* may be the same; but the description of this bark presents no analogy with that of Monesia. There is, moreover, the bark of the *Acacia virginalis*, *Cortex braziliensis* of the Lisbon Pharmacopœia, to which our bark presents some resemblance, although, in fact, it is different.

We think, then, that it will be premature to attribute Monesia to any vegetable, as we are of opinion that new information is necessary, and this we will omit no opportunity of obtaining; but the doubt under which we now labor, imposes the necessity of retaining the name of Monesia, under which the bark has been transmitted to us, and we do not participate in the fears of M. Guibourt, with respect to the inconveniences of a synonym, when the real name of the vegetable which affords it is discovered.

Chemical Examination.

The extract of Monesia which has been sent us, is in cakes of about 500 grammes, with the thickness of twenty to twenty-five millimetres, of a deep brown, almost black; it breaks readily, and its fracture presents neither the dull brown of catechu, or the brilliancy of kino; it is entirely soluble in water; its taste, in the first instance sugary, soon becomes astringent, and then leaves in the throat well marked acridity, remaining for some time.

The chemical examination of the bark, previously made, afforded the following soluble principles: 1st, chlorophylle; 2d, vegetable wax; 3d, a fatty crystallizable matter; 4th, glycyrrhizine; 5th, an acrid matter a little bitter; 6th, a little tannin; 7th, an organic acid not studied; 8th, a red coloring matter, closely resembling that of cinchona; 9th, phosphates of lime and magnesia; 10th, a salt of lime with the organic acid. The comparison of the imported extract, and that prepared for this analysis, has evinced their entire identity, with the exception of some differences which appertain more or less to the modes of preparation. A short time after the reading of this analysis to the Society of Pharmacy, M. Heydenreich, a pharmaceutist of Strasburgh, examined, at the request of Prof. Forget, a small quantity of the bark of Monesia, which he had from us: the results of our co-associate are the following:

The ligneous residue, which constituted five-eighths of the bark, when treated successively by cold water, boiling water, and ether, being reduced to ashes, has shown the presence of carbonic, sulphuric, and chlorohydric acids combined with much lime, potassa, and a little iron and silica.

The extract was composed of

Tannin, becoming blue with iron,	52
Gum or mucilage,	10
Sweet matter,	36
Loss,	2

We have repeated our first analysis to render it complete; the following is the result of our second effort.

Chemical Analysis.

Monesia bark in powder, exhausted by water in a displacement apparatus, affords a liquid of a reddish brown; acid, as regards litmus paper, having a taste at first sugary sweet, then styptic, bitter, and very acrid. This liquid affords a pale yellow precipitate with tartar emetic, a grayish brown with acetate of lead; gelatine forms with it abundant yellow flocculi, and the sulphate of iron a bluish black precipitate, like that of the substances containing tannin with iron. The liquid evaporated by a mild temperature to dryness, left 24 to 25 per cent. of a reddish brown extract, the appearance of which resembled catechu or kino. This extract is soluble in alcohol and in water, with the exception of a small quantity of apothema of tannin, formed during concentration.

To isolate the different principles contained in Monesia bark, we have followed the common method, which consists in acting upon it with different menstrua, such as sulphuric ether, alcohol, water, hot or cold, acids, &c.; and for these operations we have employed the displacement apparatus.

Treatment by Ether.

Sulphuric ether, after having acted upon the powdered bark of Monesia for several days and exhausted it, assumes a greenish yellow tint; distilled then to $\frac{1}{20}$ths it leaves a deep green residue, which separates from a liquid part, which is yellow and sugary. If this residue be treated with cold water, the greenish substance is isolated, which appears formed of wax and chlorophylle, besides a crystallizable fatty substance.

Chlorophylle and Wax.

This chlorophylle has been isolated by aid of cold alcohol, or of water slightly alkaline; it was soluble in ether and boil-

ing alcohol, with which it formed solutions of an intense green; after evaporation there remained a green substance, very fusible and a little solid.

Crystallizable Fatty Matter.

This substance dissolves in alcohol, and crystallizes by spontaneous evaporation in pearly laminæ; it is fusible at 32° or 34°, Centigrade; forms a pretty fixed web upon paper; potassa saponifies it easily; it appears to us to present the characters of stearine; the proportion of it was not great.

Sugary Matter, (Glycyrrhizine.)

The proportion removed by ether, and separated from the residue by means of water, was filtered carefully, and gently evaporated; it gave a product a little reddened, pulverulent, uncrystallizable, having the sugary taste of liquorice well marked: this substance presented to us all the characters assigned to glycyrrhizine.

Dissolved in water, and in the first place freed from all traces of tannin, by means of small layers of softened parchment thrown into the solution, it afforded a fluid, not capable of fermenting, of a very sweet taste, like liquorice, and in which potassa, acetate of lead, and especially chlorohydric, phosphoric, sulphuric and other acids, produced abundant gelatiniform deposits.

The precipitate produced by sulphuric acid, added in notable proportion, was collected on a fine piece of linen, and carefully drained; it was pulpy and brownish. We allowed it to remain in contact, for some days, with sulphuric ether, in order to separate it as much as possible from the excess of sulphuric acid. At the end of this time the ether had allowed to separate pearly crystals, and the precipitate itself had upon its surface a like crystallization; this precipitate, separated from all the ether, and dried by free hot air, was carefully treated with carbonate of baryta; we finished by carefully drying this mixture; we then heated it with alcohol;

this menstruum removed the sugary matter, which we regard as glycyrrhizine, and which remained, after filtering and evaporation, under the form of a dry matter, reducible to a slightly reddish powder.

Alcoholic Treatment.

To the action of sulphuric ether we made succeed that of hot alcohol at 30°; the clear liquid obtained was permitted to stand some days in a closed vessel, when it afforded a powdery precipitate of a rosy white; this was collected and immediately examined.

The alcoholic tincture was sensibly acid to blue paper, of a deep brown color, like the solutions of catechu and kino; its taste in the first instance was styptic, then bitter, and very acrid to the throat.

After distillation, pushed to dryness, we had as a residue a deep brown extract, very dry and friable, affording a dull brick dust red powder; this extract, when treated with cold water, was completely dissolved, with the exception of some flocks of brown apothema. The filtered liquid, tested by reagents, gave the following reactions.

1. With gelatine an abundant precipitate, without complete decoloration.
2. With tartar emetic a flocculose precipitate, *idem.*
3. With sulphate of iron a bluish black precipitate.
4. With potassa and ammonia a reddish brown gelatinous precipitate.
5. With the acids the liquid assumes a color somewhat reddish.
6. With lime and baryta a precipitate is formed, of gelatinous consistence, and reddish.
7. With acetate of lead, the same.

A portion (A) of the extract was weighed with care in a state of dryness, then dissolved in distilled water and filtered; there remained upon the filter a small quantity of brown powder, again the apothema of tannin. In the clear reddish

brown acidulous liquid, of styptic taste at first, then very acrid, we placed fragments of parchment, previously well washed and softened.

Tannin, or Tannic Acid.

After forty-eight hours the organized membrane was swollen and hardened by the combination with tannin. This having been accomplished, the liquid no longer evinced tannin with the sulphate of iron. This was filtered anew, at the same time washing the parchment, and evaporated to dryness without loss. The difference of weight of the dry extract, with that which it possessed originally, indicates nearly the proportion of tannin. The extract still preserved its brown color; it was acid from malic acid, and its acrid taste was well marked.

Red Coloring Matter—a kind of Cinchona Red.

The residue, treated by alcohol, at 25°, completely dissolved in this menstruum. An excess of slacked lime was then added, in fine powder, or acetate of lead, and immediately there was formed a rose gray precipitate, or wine dregs, produced by the combination of coloring matter with the oxide of calcium or that of lead.

This substance, which very much resembles what is found in catechu, in kino, and especially in the bark of Peru, (red cinchona,) was disengaged from its combination with the oxide of lead by means of sulphuretted hydrogen and the proper treatment. It was of a reddish brown color, little soluble in strong alcohol, more so in water or alcohol, at 25°. Its taste was slightly acrid; and under the influence of potassa, it appeared capable of precipitating tannin like gelatine, and becoming black with the sulphate of iron; properties recognised by MM. Pelletier and Caventou in the red insoluble matter of cinchona.

The alcohol, scarcely colored, retained an acrid substance, which we proceeded to examine, and which remained after the most cautious evaporation of the menstruum. When the

hydro-alcoholic extract of Monesia, made directly with the powder, not treated beforehand with sulphuric ether, is employed; and when the tannin is separated by means of parchment, as has been stated above, we can readily obtain glycyrrhizine, with the characters described. To do this, it is necessary to act upon the product, freed from tannin and brought to a dry consistence, with hot alcoholized sulphuric ether; the vehicle leaves the sugary principle by its evaporation, and the acrid and coloring matters are afterwards obtained.

Acrid Matter—Monesine.

The product which is now about to occupy us, is doubtless one of the most important contained in Monesia bark.

Having recognised in the portion A, the existence of other principles, and having examined them in part, we have, in the portion B of the extract, endeavored to isolate only the acrid substance.

To this end, the extract dissolved in hot alcohol at 25, and filtered, was treated with an excess of lime reduced to fine powder. The decoloration was complete, and the filtered alcoholic liquid was subjected to a slow and careful evaporation to complete dryness. The residue was submitted to pure water, and filtered, after which it was evaporated anew with the same precautions.

The product obtained constitutes the acrid matter of Monesia, for which, at present, we shall retain the name of *Monesine*, which, in the first instance, we have bestowed upon it, although it has considerable analogy to saponine, and also to polygalic acid, &c., as we shall demonstrate.

This acrid matter, dried at 20, presents the appearance of transparent plates, slightly yellow, very friable, like dried gum. It is easily reduced to a white powder, readily dissolves in alcohol and water, hardly in sulphuric ether; it communicates to water the property of frothing considerably. By no means of evaporation, either in the atmosphere, or in a vacuum, could we make it crystallize, for the solutions dried

spontaneously upon pieces of glass, have not allowed to be perceived by the microscope any sign of crystals.

The solution of this matter does not saturate acids; it has no odor, but its taste, at first a little bitter, soon occasions in the throat the feeling of *acridity*, which is well marked and very persistent. By means of nitric acid it is soon converted into a yellow friable substance, almost insoluble in cold water, but very soluble in alcohol, presenting much bitterness, and leaving, after spontaneous evaporation, a yellow residuum in pearly leaves, with somewhat of a crystalline aspect. This product appears to be similar to the resin which M. Henry announces he has obtained in the reaction of nitric acid with esculic acid; perhaps it is analogous to nitro-picric, or carboazotic acid?

When we compare the different physical and chemical characters of the acrid principle of Monesia, there will be found a close resemblance between them and those of *saponine, polygalic acid,* and even, although more remotely, with *salseparine.*

We have examined anew these characters, in specimens of *saponine, polygalic acid, and salseparine,* which we have ourselves prepared, or for which we are indebted to MM. Busy, Quevenne, and Thubeuf; and the results obtained with muriatic acid, potassa, and nitric acid, are very close.

It is very probable, that if we can obtain, in succession, these different substances, well crystallized, or exempt from all the foreign matter which accompanies them, that the analogy will be complete. The fear of not obtaining the acrid matter of Monesia to submit it to elementary analysis, has so far prevented us from essaying this proof, which might then demonstrate its close alliance with *saponine.* Saponine, undoubtedly, is an immediate vegetable principle, appertaining to different vegetables, and not restricted to the saponareæ; the same occurs in other vegetables, as, for instance, in the case of asparagine, cafeine, piperine, &c., found in the individuals of families removed from each other.

Some years have elapsed since one of us has isolated, with

Boutron Charlard, from the bark of the Quillaia saponaria, an acrid matter, which, to a certain extent, presents an analogy with saponine. (*Journ. de Pharmacie.*)

Malate of Lime.

We have stated previously, that the hydrochloric tincture of Monesia allowed to deposit, at the end of some time, a pretty abundant rose colored or whitish precipitate. Desirous of knowing the nature of this deposit, we in the first place boiled it with alcohol, at 35°, to deprive it of all coloring matter. It was then drained and dried, when it was treated with warm water sharpened with sulphuric acid; after proper boiling, a little animal black was added; it was filtered, boiling, and the half of the liquid, when evaporated, left, with sulphate of lime, a white salt, which was destroyed by calcination in the atmosphere, leaving a little carbon and carbonate of lime; the other half, by the addition of acetate of lead in sufficient quantity, furnished, cold, a white precipitate. This precipitate, washed and drained, boiled with water, and filtered boiling, afforded, by evaporation, small needle-shaped crystals, recognised as *malate of lead.*

This salt, brought in contact with sulphuret of barium, dissolved in water, gave rise to sulphuret of lead and a liquid, from which was obtained, by means of the careful addition of sulphuric acid, the malic acid with its characteristic properties.

Treatment by Water.

After finishing with ether and alcohol, we submitted the bark, in great part exhausted of its principles, to the action of distilled boiling water; the fluid, however, still removed some red coloring matter, traces of tannin, of acrid matter, glycyrrhizine, &c., but no fecula. The liquid contained gum, or a principle of this kind, and some salts of potassa, as the sulphate, chloride, and malate.

Insoluble Residue from the preceding Treatments.

The ligneous portion resulting from these different treatments was still reddish, it was submitted—1st, to the action of dilute muriatic acid; 2d, to potassa; and 3d, to calcination.

Earthy Phosphates, and Malate of Lime.

By means of acidulated water, we isolated a certain quantity of calcareous salts, which were precipitated by saturating the acid by ammonia in excess,—the deposit contained malate of lime, which was easily recognised; and after its calcination, we found phosphate of lime mixed with traces of phosphate of magnesia.

Pectine, or Pectic Acid.

In treating the residuum by the alkaline water from pure potassa, we have separated, among other distinct substances, *pectine*, or *pectic acid.*

Oxides of Iron and Magnesium.

Finally, the residuum, submitted to two treatments and well washed, was calcined, to destroy all the ligneous fibre, which constituted the greater part of it. There remained some traces of phosphate and carbonate of lime (coming from the malate) not removed by the acid, oxide of iron, and traces of manganese and silica.

Aromatic Principle.

A certain quantity of Monesia was distilled with water, and the product cohobated several times; the liquid collected had scarcely a sensible odor. Agitated with pure sulphuric ether, and this vehicle separated by decantation, we had, after complete evaporation, a residuum slightly greasy to the touch, almost imponderable, and of a peculiar aromatic odor; the very smallest proportion of this product, in other respects

without real importance, hindered us from pronouncing upon this point.

It results from the experiments which we have presented, that Monesia bark contains in the hundred parts of dry bark,

1.	Aromatic principle? Imponderable traces.	
2.	Crystalline fatty matter, stearine.	
	Chlorophylle and wax,	1.2
3.	Glycyrrhizine,	1.4
4.	Monesine, (or acrid matter resembling saponine,)	4.7
5.	Tannin, or tannic acid	7.5
6.	Red coloring matter, resembling that of cinchona or catechu,	9.2
7.	Gum, a small quantity,	not appreciated.
8.	Malic acid,	1.3
9.	Malate of lime,	
10.	Phosphate of lime,	3.0
	" of magnesia,	
	Sulphate of potassa,	
	Chloride of potassium,	
	Malate of potassa,	
	Oxides of iron, manganese, silica,	
11.	Pectic acid, or pectine	71.7
12.	Lignin, or ligneous fibre,	
	Loss,	
		100.0

Pharmaceutical Preparations.

The pharmaceutical forms under which Monesia at the present time has been used, are the following:

1, an extract obtained by water; 2, a syrup; 3, a hydro-alcoholic tincture; 4, a pommade; 5, the acrid matter, or *Monesine.*

Extract of Monesia.

We have prepared this extract by exhausting the bark in coarse powder with water, by means of a displacement appa-

ratus, and evaporating to the consistence of a dry extract, by means of steam or a salt water bath.

Simple Syrup of Monesia.

℞. Syrup of white sugar,	9 k.	800 grs.
Dry extract of Monesia,		100
Pure water,		100

This syrup contains one to 100 of its weight of extract of Monesia, (six grains to the ounce.)

Compound Syrup of Monesia.

℞. Simple syrup of Monesia,	1 killogramme,
Extract of white poppies,	16 decigrammes.
Orange flower water,	30 grammes.

Hydro-alcoholic Tincture of Monesia.

℞. Extract of Monesia,		500 grs.
Pure water,	7 k.	500
Alcohol, at 34°,	2 .	000

This tincture contains five per cent. of its weight of extract (30 grains to the ounce.)

Pommade of Monesia.

℞. Oil of sweet almonds,	4 P.
White wax,	2
Extract of Monesia,	1
Water,	1

Monesine, or Acrid Matter.

Monesine is obtained by exhausting the bark with hot alcohol at 25; to this tincture is added an excess of slacked lime, in fine powder; by agitation, the liquid is decolored; a magma is formed, of a reddish brown color, which retains the coloring matter and tannin, the glycyrrhizine, malic acid, &c., combined with lime; the alcohol retains the Monesine in solution. It is necessary to distil this clear liquid, evaporate to

dryness, and redissolve the residue by means of cold water, to which a little animal charcoal is added. By filtering, and bringing it to the dry state again, by means of the salt bath, a yellow friable product is obtained, which, when reduced to powder, constitutes Monesine; with this powder can be prepared all the medical formulæ, as pills, syrup, pommade, &c.

Medical Employment.

From the information furnished by chemical analysis, and from the observations made upon healthy subjects, and especially from the knowledge of the diseases in which the natives of the country where Monesia grows employ this substance, it, in the first place, has been employed in affections characterized by general or local atony, sanguine or serous discharges, and it is only by analogy that it has been tried finally in other diseases.

Administered by the stomach, Monesia has been useful in hæmoptysis, menorrhagia, debility of stomach, dysentery, scorbutic disease, scrofula, and especially diarrhœa. It has been tried with various results, in bronchitis, phthisis, leucorrhœa, enteritis, &c.

The topical employment of Monesia has produced advantageous results in ulcers of different parts of the skin, and of different characters. It has succeeded in stomatitis, ophthalmia, hæmorrhoids, fissures of the anus, ulcerated chilblains, &c.

As regards the mode of administration, the extract of Monesia is given in the dose of 16 to 24 grs. daily in ordinary cases; in more rebellious cases, as menorrhagia, and profuse diarrhœa, it may be necessary to give from 40 to 60 grs.; finally, in constitutional affections, as scrofula, it is requisite to augment progressively the dose during thirty or forty days, and to attain four grammes or more of the extract daily.

Monesine has heretofore been administered, but once internally in the dose of 16 centigrammes; and externally it has

been employed with advantage to stimulate atonic ulceration, which it does more actively than the dry extract.

We must here conclude our remarks upon the employment of Monesia, and will reserve ourselves for further development in a journal specially medical.

Journ. de Pharmacie.

ART. XXXIV.—ON THE PREPARATION AND USE OF THE SESQUI-IODIDE OF IRON. By Oberdœrffer, Pharmaceutist at Hamburg.

The author proposed to replace for medicinal use, the proto-iodide of iron, which is very alterable, by the sesqui-iodide, which may be preserved for a long time without alteration, and which he obtains in the following manner. He causes 16 grammes of iodine to act upon 6 grammes of iron in 32 grammes of water, until the iodide of iron is formed; the liquor is then filtered and diluted with 128 grammes of water and 8 grammes of iodine added, which readily dissolves; finally, sufficient water is added to make up 320 grammes.

Eight grammes of this medicine represent 43 centigrammes of iodine. It produces the same effects as the iodide, but is more active, and should be given internally in less doses. The best form for its use is that of syrups.

Journ. de Pharm.

MINUTES OF THE BOARD OF TRUSTEES PHILADELPHIA COLLEGE OF PHARMACY.

At a stated meeting of the Board of Trustees of the Philadelphia College of Pharmacy, held Fifth mo. 17, 1841, the following letter from Dr. Bache was read, accepted, and referred to Warder Morris, Dillwyn Parrish, and Samuel F. Troth, with instructions to prepare the proper resolutions on the occasion, and report to the next meeting.

April 15th, 1841.

"To Henry Troth, Esq., Chairman of the Board of Trustees Philadelphia College of Pharmacy.

Dear Sir,—Having recently accepted a Professorship in the Jefferson Medical College, the arduous nature of my new duties makes it necessary that I should retire from the service of the Philadelphia College of Pharmacy. I therefore respectfully tender to the Trustees my resignation of the Professorship of Chemistry in the College.

In taking this step, which dissolves my connection as a teacher with the College, I cannot omit to express my high sense of the importance of the objects of its members, and my ardent hope that the Institution may have a long career of prosperity.

Very respectfully,
Your obed't servant,
Franklin Bache."

The Board then proceeded to nominate candidates for the Professorship of Chemistry, vacated by the resignation of Dr. Bache; and on motion, it was

Resolved, That a special meeting of the Board be called on the 31st inst., at 8 o'clock, P. M., in order to proceed to the election of a gentleman to fill the chair of Chemistry of the

College, and that the Secretary be requested to notify the members of the object of the meeting.

Fifth mo. 31*st*, 1841.

At a special meeting, called pursuant to direction of the Board at the last stated meeting, held this evening, the object of the meeting being stated by the Chairman, on motion, the Board proceeded to ballot for a Professor of Chemistry, which resulted in the election of Dr. WILLIAM R. FISHER.

The Secretary was directed to notify Dr. FISHER of his election.

At a stated meeting of the Board of Trustees, held Sixth mo. 21, 1841, the following resolutions, reported by the Committee in reference to the resignation of Dr. BACHE of the Professorship of Chemistry in the College, were, on motion, unanimously adopted.

Resolved, That in accepting the resignation of Dr. FRANKLIN BACHE, as Professor of Chemistry in this Institution, the Board of Trustees, on behalf of the Philadelphia College of Pharmacy, desire to express their sense of the distinguished zeal and ability with which he has uniformly devoted himself to the interests of the College.

Resolved, That while they deeply feel the loss they have sustained, in being deprived of his valuable services, they rejoice that his sphere of usefulness will be extended in the new station which he has accepted, as Professor of Chemistry in the Jefferson Medical College.

Resolved, That in thus dissolving a connection which has subsisted for ten years, we desire to bear testimony to the high moral worth and suavity of manners which has marked the intercourse of the Professor of Chemistry with the mem- of this College, and to express our sincere desires for his future prosperity and happiness.

Resolved, That a copy of these resolutions be recorded on our minutes; and that the Secretary be requested to transmit a copy to Dr. F. BACHE, signed on our behalf.

From the minutes of Board of Trustees,

AMBROSE SMITH, Secretary.

MISCELLANY.

Note on Minium.—Although minium has been the object of the researches of many chemists, opinion is yet divided as to the true mode of representing its composition, and even as to its analysis. Having occasion to examine several specimens, with regard to their commercial value, the observations that were then made, induced me to undertake the experiments, of which I offer here the following results; I do this with the more confidence, because they appear to me to afford additional support to the opinion which considers minium, not as an oxide distinct from the two oxides PbO and PbO^2, but rather as a combination of these two oxides in a constant and definite proportion.

The most important investigations which have been made, in a scientific point of view, with regard to minium, are those of M. Dumas, from which it results, that this product has always the following composition:

$$PbO^2+2PbO,$$

when properly purified and saturated with oxygen. It is likewise this proportion which I have constantly found in analysing miniums under new circumstances, and by the two different processes which I am about to describe.

The first consists in calcining, in a crucible of silver or platinum, a mixture of 100 parts of protoxide of lead, the product from calcined white lead, with 25 parts of chlorate, and 200 parts of nitrate of potassa; the object of this latter is, to give greater fluidity to the mixture, without increasing the amount of chlorate.

By operating in this manner, the action of the oxygen upon the oxide of lead is so efficacious, that it is changed into peroxide; this oxide may thus be procured with great facility. If we proceed farther, if the temperature be elevated to an obscure red, the effervescence diminishes, the mass thickens, and minium is perceived to form.* It is sufficient to boil

* It is necessary to continue the elevation of the temperature until it commences to decompose in some points towards the sides, so as to be certain that no peroxide remains. If the object is to prepare this latter oxide, it is necessary to withdraw the

the residue with a solution of caustic potassa or soda, and afterwards to wash it well to obtain pure minium, with the composition before indicated. The product is in a minute state of division, of a beautiful red, slightly bordering on orange, like the best miniums of commerce.

Minium may also be obtained in the moist way, by boiling, for one or two hours, a solution of an alkaline plumbate, with deutoxide of lead in fine powder;* the color of the deutoxide gradually changes, and finally becomes an ochreous red powder. This powder is nothing else but minium, commonly contaminated with a small quantity of deutoxide which has not been affected by the alkaline plumbate; it may readily be freed from this by digestion with a solution of oxalic acid, which destroys the deutoxide without attacking the compound, and the oxalate of lead may afterwards be separated by caustic potassa or soda. The product thus obtained, has always a red tinge, more deep than that of minium prepared in the dry way, but it becomes lighter, and approaches it more when triturated with water; otherwise, it has exactly the same composition as minium, and the difference in the tint appears due solely to the difference of texture; in fact, there is somewhat of a crystalline appearance in the minium obtained in the moist way.

My analyses were made by keeping the miniums in contact with an excess of nitric acid, of 15° B., for 24 hours, and shaking frequently, without any increase in the temperature, which would decompose a portion of the deutoxide, which dissolving even in small quantity, would color the liquid of a violet. It only remains, after this treatment, to dry the residue and weigh, taking care to ascertain that it is completely soluble in proto-nitrate of mercury, which has no action on minium.

The motives which induce me to admit, as the most likely, the opinion that minium is a combination of the two oxides, are the following:

Admitting that minium is a peculiar oxide, intermediate between these two oxides, the fact becomes inexplicable, that protoxide is, by calcination with chlorate of potassa, readily converted into deutoxide, while I have satisfied myself that minium cannot, in this manner, be changed into deutoxide.

crucible, when the matter has acquired a black tint, of a uniform color, which commonly happens with the proportions mentioned, when the whole mass of the mixture is in full fusion; it is thus easy to convert into pure peroxide, at least nine-tenths of the protoxide of lead used, by treating with nitric acid, the residue, after having been well washed. The peroxide of lead, thus obtained, is nearly black.

* We may employ the pure plumbate, but it is more convenient to use a solution obtained by dissolving in water five or six parts of crystallized nitrate of lead for one of deutoxide, to which is to be added caustic soda or potassa, in sufficient quantity to redissolve the hydrate.

Oxalic acid causes the deutoxide to pass immediately to the state of protoxide, but does not alter minium in the least; which is at the same time a good mode of purification, and characteristic of minium. Since this acid, as well as the proto-nitrate of mercury, and sulphuric acid, reduce the deutoxide to protoxide, and do not affect minium, it may hence be inferred, not only that minium is a compound of the two oxides, but it is also endowed with a remarkable stability.

Ann. de Chim. et de Phys.

Note on the Preparation of Tannin. By M. Duval.—To prepare tannin by our process, take, as in the usual mode, equal weights of nut galls and of ether. Expose these two substances in a glass or stone ware vessel, to a temperature of 15° or 20°, C.; after macerating for one month, the mixture having become a somewhat solid paste, place it in a strong cloth and submit it to pressure. The product obtained will be of the consistence of molasses, very adhesive to the touch, and does not disengage any portion of the ether which it contains at ordinary temperatures. If, having placed this mixture in an open vessel, we expose it to the sun, or in a stove, at the end of some time we will perceive the surface to become covered with efflorescence, while the rest of the mass maintains the appearance of a thick honey-like liquid, for more than six months.

To obviate this inconvenience, which retards the preparation of tannin, and affects its purity, by the deposition of foreign bodies contained in the atmosphere, it is necessary to submit the mixture to the action of an elevated temperature, of at least 120°, C. This temperature may be obtained in a very fixed manner, by means of a very concentrated solution of chloride of calcium. The chloride of calcium thus forms an excellent salt water bath, of very great service in many chemical preparations.

The apparatus which I use is composed:

1. Of an iron boiler, containing the muriate of lime.

2. Of a flat bottomed silver basin, (one of copper will answer if well tinned,) into which the tannin is to be placed. This latter is to be placed in the muriate of lime, which is to be raised to the boiling temperature. But to obtain a temperature of 120°, C., without burning the product, and without accident to the operator, it is necessary to take some precautions which are readily foreseen.

Having disposed the apparatus with suitable precautions, and having cautiously set it in operation, that portion of the ether which preserves the tannin in the state of a thick liquid will readily volatilise, and the inferior part of the mass touching the basin will be converted into brilliant, nearly white, very light scales, forming a mass of greater bulk than before. Meanwhile, the upper portion remains colored and transparent, because it

contains a large quantity of the ether which cannot be driven off, the heat not penetrating with sufficient power to this part. It is in this state that we find the tannin in commerce. But to render it white and light throughout the whole mass, it is proper to cover the whole basin with a plate of copper, on which some red hot coals are to be placed; then the same phenomenon, indicated above, will be perceived to take place, namely, the part remaining colored and transparent will increase in bulk, and become changed into very light white scales, as had happened in the portion touching the basin itself.

Ann. de Chim. et de Phys.

New Product.—A. Woulens, near Amiens, possesses a large cotton spinning establishment, which is lighted by means of oil gas. This gas on escaping from the iron cylinder filled with red hot coals, in which it is formed, traverses a reservoir of oil, in which it deposits a white liquid matter, which can be drawn off by a stopcock at the lower part of the reservoir. The workmen charged with its care having spread this matter on the water on the ground, it inflamed spontaneously, and running into a neighboring rivulet it spread upon the surface of the water, so that the whole appeared on fire. The proprietor of the establishment intends to send a flask filled with this singular substance to M. Gay Lussac for chemical analysis.

Journ. de Chim. Med.

New Active Principle. By MM. Vandamme and Chevallier.—There exists in the seeds of the ivy an alkaline matter, to which M. Chevallier, pharmaceutist at Amiens, and myself, have proposed during the past year to give the name of *hederine.* This substance is a very strong bitter, and appears to have a strong affinity with quinia in febrifuge properties, besides being an indigenous product like salicine.

Hederine is found in the seed of the *hedora helix*, and appears to exist as a super malate. The mode of separation is the same as that of the other vegetable alkalies, that is to say, treating with boiling alcohol, the hederine precipitated by hydrate of lime, and afterwards evaporating the liquor.—*Ibid.*

Use of Chloride of Lime in the Treatment of the Itch.—We have found in foreign journals, under the title of "New treatment of the Itch," by M. Raffael Napoli, the following article:

R.	Chloride of lime,	1 pound.
	Water,	3 or 4 pounds.

Mix and digest for two hours, and then filter through linen.

Compresses are to be dipped in this solution, and applied to the parts affected; each compress is to be covered by a second, moistened in strong vinegar. The compresses are to be renewed as they become dry, and the application continued until the liquid is all used; about which time the cure will be completed. In some very rare cases, a continuance of the application is required.

We will observe that the treatment proposed by M. Napoli is not new, and that the use of chloride of lime against the itch was printed; and the following formula given in 1827, by M. Derheims, pharmaceutist at St. Omeers.

Dry chloride of lime,	3 ounces.
Common water,	1 pound.

Prepare a solution, to be used as a lotion for the arms and legs twice a-day. According to M. Derheims, the cure is effected in from six to ten days, which is a good result, as Dr. Mellier has proven that the duration of treatment in twenty cases was sixteen days. M. Derheims also states that the chloride prepared by passing chlorine through a solution of lime, and which contains an excess of chlorine, is more active, and produces more favorable results.—*Ibid.*

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*Chemico-Legal researches on Morphia.**—Iodic acid has been offered as a test to indicate the presence of morphia; as this has the property of depriving the acid of oxygen, as thus liberating iodine. Davidson denies the utility on this point, after the following observations:

While examining, some months since, the urine of a patient, he ascertained that on adding a portion of iodic acid, the urine acquired the odor of iodine; and starch with it produced an azure tint. I then examined, says he, what element of urine possessed this property. I tried both urea and uric acid, and discovered that the latter only produced this effect, and could thus be recognized in the urine of healthy persons, as well as in that of the sick. I afterwards examined the effects of iodic acid on the serum of blood, and obtained the same effects, but more slowly, and the color was less deep than with the urine of persons in health. All the albuminous fluids which I examined gave the same results, the only difference being in the intensity of color. I observed the same facts with regard to the serum of the brain of a man dead of typhoid fever, in the liquid evacuated by paracentesis after peritonitis, of ascites, in the serum of the milk of a heifer, &c. The serum of blood, even when mixed with four or five parts of water, gave, with iodic acid and starch, the same color, but not so well as when undiluted.

* Rep. delle Scienze Fisico-Med. 1840.

It appears from these facts, that iodic acid is susceptible of being decomposed by substances which exist in abundance, as an element of nutrition, and as a constituent of the liquids and solids of animals. One of the secretions, urine, contains a substance which has the same effect. Hence, on analysing the substances contained in the stomach, in a case of poisoning by opium, the certainty of finding albumen, and the possibility of meeting uric acid, can render the separation of the morphia from these two substances but very difficult and complicated, and even doubtful, so that iodic acid can no longer be considered as a test for Morphia.

J. de F.

Journ. de Pharm.

Elixir of Vitriol.—Among the relics of old pharmacy retained in the French Codex, is the preparation known by the names of *Teinture aromatique*, *Elixir vitriolique de Mynsicht*, and *tinctura aromatica sulphurica.* Lest any of our young readers should confound it with with the aromatic spirit of ether of the Pharm. Lond., 1824, we will observe that the Parisan elixir is made without distillation. The French recipe is as follows:

Take of the root of sweet flag, an ounce; galangale, (*Galanga officinalis,*) an ounce; chamomile flowers, half an ounce: sage leaves, half an ounce; wormwood leaves, (*Absinthium officinale,*) half an ounce; curled leave mint, (*Mentha crispa,*) half an ounce; cloves, three drachms; cinnamon, three drachms; cubebs, three drachms; nutmegs, three drachms; ginger, three drachms; aloes wood (*Aloexyluma galochum,*) one drachm; lemon peel, one drachm: white sugar, three ounces; alcohol, two pounds; sulphuric acid, four ounces.

The solid substances are to be reduced to a coarse powder, then put into a matras, and eight ounces of alcohol poured over them. After forty-eight hours' maceration, the sulphuric acid is to be gradually mixed with them, and the mixture is to stand for twenty-four hours; the rest of the alcohol is then to be added.—*London Med. Gaz. from Med. Ex.*

Johnson's Syrup.—The patent granted to the inventor for five years having expired, this syrup has become public property. It consists of an ounce of syrup of liquorice, forty-six grains of the fresh juice of asparagus heads, and the same quantity of the syrup of mallow.—*Ibid.*

On the preservation of Cantharides.—I wish to make known a process, which I have not seen described, by which, at the moment of collection, the life of the Spanish fly may be destroyed. This mode, which is very simple, consists in placing them in a bottle, or other vessel, and closing air-tight with cork, to expose them to the direct rays of the sun for some hours. The fuller the vessel, the sooner will asphyxia take place, as it is

produced more rapidly with the elevation of temperature; when we wish to act more rapidly, a few drops of ether in the vessel will effect this. By operating thus, it appears to me that the cantharides will be in better preservation than when destroyed by vinegar. I leave to my colleagues to verify this by experiment.—RIQUET, Pharmaceutist.

Journ. de Chim. Med.

The flowers of Krooso.—According to M. Abadie, (Theodore,) these flowers, brought from the moist countries of Abyssinia, belong to the family Malvaceæ, and are a remedy for tænia. The analysis of these flowers, made by M. S. Martin, have proven that they contain—

1. Amidon.
2. Saccharine matter.
3. Vegetable extractive.
4. Very odorous green resin.
5. Crystals soluble in water and in alcohol, having the property of reddening litmus paper.

Journ. de Chim Med.

On the Microscopic Constituents of Milk. By Professor NASSE, of Marburg.—After a careful microscopic examination of milk from pregnant and suckling women, as well as from a cow and a bitch, and a comparison of his results with those of Donné and other preceding observers, the author says that the following may be enumerated as the microscopic constituents of the normal secretion of the mammary gland: 1. The smooth, homogeneous, transparent oil-globules, to which, in addition to the common milk-globules, belong also the fine, scarcely-measurable particles, and the larger drops of oil which swim on the top of the milk. 2. The cream-globules, which are distinguished from the oil-globules by their opacity and their facette-like aspect. 3. The granulated yellow corpuscles. 4. The lamella of epithelium. 5. The more or less turbid medium, in which the four preceding kinds of corpuscles are suspended.

The first, the common milk-globules, are composed entirely of fatty matter, which dissolves completely and rapidly in ether. No membrane can be seen investing them. In the first nine days after delivery, the largest globules measure 1-200th of a line in diameter; afterwards they are as much as 1-100th, but many are found of a much smaller size; and through all periods of lactation, the microscope, as well as other means of examination, show that the proportion of oil-globules in the milk varies greatly in different persons and under different circumstances.

In perfectly fresh, warm woman's milk, no other globules than these are sometimes found. But as soon as the milk has stood for some time exposed to the air, other corpuscles are discernible in it, which are distinguished from the preceding by a greater definiteness, a less degree of

polish, and an appearance of facettes. In size they are nearly similar to the oil-globules; but if the milk be examined some time after it is drawn, a number are found much larger—1-50th of a line or even more in diameter. They are not so easily soluble in ether as the common milk-globules; they do not break up in drying, but they become clearer; acetic acid and ammonia have no influence upon them; they diminish for a time when the milk is boiled, but they re-appear gradually as it cools again; when left at rest, they collect on the surface and form the cream; they easily stick together, and butter is formed when they are collected in one homogeneous mass. It is evident that they acquire their peculiar characters after they they are drawn from the gland-ducts; for the author, as he watched them on the field of the microscope, could see individual globules which were originally clear, becoming on a sudden quite dark, and assuming the several characters of the cream-globules.

The yellow granulated corpuscles are almost peculiar to the colostrum; after the first few days from delivery, they cease to occur in the milk, and they disappear from it earlier in those who have borne several children than in primitive paræ. They are not all spherical; the majority are flat. Their diameter is at most from 1-200th to 1-100th of a line; some are found measuring 1-50th in length and 1-75th in breadth. They consist of small clear globules of fatty matter, which are connected together by a firm cement, which is unalterable by either ammonia or concentrated acetic acid, or by boiling. When the milk is left at rest, these globules collect on its surface; and, when they exist in considerable numbers, render it unfit for making butter. The author believes that they are not, like the preceding globules, formed by the action of the air; but that they are produced by the secreting surface of the gland-ducts, and are analogous to the mucus-cells which are cast off from the surfaces of many mucous membranes, and to which they are in many respects very similar.

Müller's Archiv.